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SIXTEENTH BIENNIAL REPORT

OF THE

NORTH CAROLINA
STATE BOARD OF HEALTH

1915-1916

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SIXTEENTH BIENNIAL REPORT

OF THE

NORTH CAROLINA
(STATE) BOARD OF HEALTH

1915-1916

RALEIGH
EDWARDS & BROUGHTON PRINTING CO.
STATE PRINTERS
1917

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Members of the State Board of Health

Elected by the North Carolina Medical Society:

Thomas E. Anderson, M.D., Statesville.
Term expires 1917.
Charles O'H. Laughinghouse, M.D., Greenville.
Term expires 1917.
F. R. Harris, M.D., Henderson.
Term expires 1919.
Cyrus Thompson, M.D., Jacksonville.
Term expires 1919.

Appointed by the Governor:

J. L. Ludlow, C.E., Winston-Salem.
Term expires 1921.
J. Howell Way, M.D., Waynesville.
Term expires 1917.
W. O. Spencer, M.D., Winston-Salem.
Term expires 1917.
Richard H. Lewis, M.D., LL.D., Raleigh.
Term expires 1919.
Edward J. Wood, M.D., Wilmington.
Term expires 1919.

Letter of Transmittal

RALEIGH, N. C., January 1, 1917.

His Excellency, LOCKE CRAIG,
Governor of North Carolina.

MY DEAR SIR:—Under authority of section 3, chapter 62, Public Laws of 1911, as amended by the General Assembly of 1913, I have the honor to submit the Biennial Report of the State Board of Health for the years 1915 and 1916.

Very respectfully yours,

W. S. RANKIN,
Secretary and Treasurer.

PREFACE

It is our intention to smash precedent in the size and substance of biennial reports. The large size of the average biennial report appears to rest on the hope of impressing those to whom it is addressed (not the few who read it) with the size rather than with the contents of the report. The size alone of most of these reports precludes their being read by busy people; and it makes little difference whether the other class does or does not read them. There is a story of a young reporter who was directed by a large New York paper to report a certain lynching of unusual public interest. The young reporter wired his paper to hold three columns for his story. The editor wired the reporter to confine himself to one column. The young reporter, in the atmosphere of the lynching, could see only the importance of the lynching, and wired back to the paper that it was impossible to restrict his story to a single column. The business manager telegraphed, "Description whole creation covered in Genesis one. Read it."

With this idea of brevity, and with the hope of reaching busy people, we have sought the avoidance (1) of matter that can be obtained easily from other publications, and (2) of matter consisting largely of details and statistics that is of little general interest and that can be more conveniently supplied to those interested in the form of supplementary reports. For example, the State public health laws, the itemized statement of the bookkeeper, and the vital statistics of the State have been excluded from the report. Any or all of this matter may be obtained in separate form by request of the State Board of Health.

The arrangement of this report is by fairly independent subdivisions, so that it is possible for one to read and understand any part of the report without reading the whole report.

Health Work in the State of North Carolina for the Biennial Period 1915-1916

HISTORICAL

DEVELOPMENT OF PUBLIC HEALTH

Prior to the seventeenth century our study and our knowledge of disease was confined to the manifestations or symptoms of disease, and the treatment of disease was purely empirical, and not rational. There was little known about the causes of disease and how to prevent disease. The light began to break in 1683, when Anthony van Leeuwenhoek, a lens polisher, discovered germs in spittle. This discovery of van Leeuwenhoek was confirmed by others, but little progress was made in associating germs with diseases for nearly a century afterwards. At this time, that is, along in the eighteenth century, the relation of the germs discovered by van Leeuwenhoek to disease began to be considered. One set of students took the position that the germs found in putrefying matter or fermenting fiuids or the diseased bodies were not the cause of decomposition or fermentation or disease, but the effect; the other set of students took the position that the germs were the cause of decomposition, fermentation, and disease. The debate on this interesting question occupied the best scientific minds for a century, and was not finally settled until Pasteur and Tyndall, in the nineteenth century, between 1860 and 1880, performed certain conclusive experiments showing that these lower forms of life were causes and not consequences of disease. The essential features of this long-continued and interesting scientific debate can be found in any well known text-book on bacteriology, and the evidence in its details upon which the scientific world came to its verdict of germs as the cause of disease will not be rehearsed here. Suffice to say, in passing, that the actual and convincing results of prevention during the last thirty or forty years have been accomplished by proceeding upon this scientific principle of germs as the cause and not the consequence of disease; and the proof of the pudding is in the eating.

Little headway in the association of specific germs with diseases was made until well into the nineteenth century. In 1863 Devane proved that anthrax in sheep was due to a specific germ. In 1873 Obermeier discovered the cause of relapsing fever. In the early seventies septic infections or blood poison and the suppuration of wounds was practically demonstrated to be due to germs. Lord Lister's basic discovery in antiseptic surgery naturally followed, and the science of surgery as we know it today was born at about this time, 1875. In 1879 the germ causing leprosy was discovered and, in the same year, Neisser discovered the germ causing gonorrhea. In 1880 the typhoid fever germ, the pneumonia germ, and the germ causing chicken cholera were discovered; and in the same year Laveran discovered the germ causing malaria. In 1882 Koch discovered the germ of tuberculosis, and Loeffler and Shutz discovered the germ of glanders. In 1884 Koch discovered the germ of Asiatic cholera and Loeffler the germ of diphtheria and Nicolaier the germ of lockjaw or tetanus. In 1892 the germ of influenza was discovered, and in 1894 the germ of bubonic plague was discovered.

The important facts to note in this connection is that between the years 1875 and 1895 the specific causative germs of fifteen important diseases were discovered. Out of these discoveries and based upon this knowledge of certain diseases being due to seeds or germs, and of the way in which these seed or germs are conveyed from the sick to the well, that is, the means by which disease is spread, public health activities and public health organizations, the definite and active participation of the Government in the control of disease came into existence. This fact explains the following table, giving the dates of the establishment of the various State boards of health:

Name of State	Date Established
District of Columbia	1822
Louisiana	1855
Massachusetts	1869
California	1870
Minnesota, Virginia	1872
Michigan	1873
Maryland	1874
Alabama	1875
Wisconsin	1876
Illinois, Mississippi, New Jersey, North Carolina, Tennessee	1877
Connecticut, Kentucky, Rhode Island, South Carolina	1878
Delaware	1879
Iowa, New York	1880
Arkansas, Indiana, New Hampshire, West Virginia	1881
Missouri	1883
Kansas, Maine, Pennsylvania	1885
Ohio, Vermont	1886
Florida, North Dakota	1889
Oklahoma	1890
Nebraska, Washington	1891
Colorado, Nevada	1893
South Dakota	1895
Utah	1898
Montana, Wyoming	1901
Arizona, Georgia, Oregon, New Mexico	1903
Idaho	1907
Texas	1909

Note that in the same period, from 1875 until 1895, twenty years, in which more specific causes of diseases were discovered (15 specific disease germs) than in any other like period of time, thirty-three States organized their State boards of health, declared war on man's common enemy, and entered the fight for better protection of health and life.

Once the Governments of the various States having launched a fight against disease, the development of the State agencies for State health work has gone along hand in hand with the accumulation of positive proof, in the form of decreasing death rates, of the practicability of disease prevention. The bulk of this important evidence can be seen in the following table:

GENERAL DEATH RATE OF THE UNITED STATES (REGISTRATION AREA), 1880-1914.

Year	Population	Rate Per 1,000
1880	8,538,000	19.8
1890	19,659,440	19.6
1900	30,765,618	17.6
1905	34,095,605	16.0
1910	53,843,896	15.0
1913	63,299,164	14.1
1914	65,989,295	13.6

Note in this table three significant facts: First, a noticeable decline in the death rate since the year 1880; second, this decline was steady and uninterrupted; third, the rate of the decline was slow from 1880 to 1890 and rapid from 1890 to 1914. The slow period from 1880 to 1890 corresponds with the decade during which the foundation for the prevention of disease was being laid, and before the new knowledge had filtered out of the research laboratories into the world at large. The period of rapid decline in the death rate since 1890 is synchronous with the absorption and application of the new knowledge by the world at large. In the twenty-four years from 1890 to 1914 there was a 30 per cent reduction in the death rate, a reduction of six deaths per thousand population—equivalent, if such a reduction would hold for the entire United States, to the saving of 600,000 lives a year.

We can see the influence of the increasing momentum of the public health movement by turning to the census reports on the mortalities of the important diseases. For example, the death rate from typhoid fever in 1890 was 46.27 per hundred thousand of the population. That death rate has steadily decreased to 16 deaths per hundred thousand of the population in 1914, a decrease of about 65 per cent—equivalent to the saving of 30,000 lives a year from this one disease. Tuberculosis has decreased from 245 deaths per hundred thousand population in 1890 to 145 deaths per hundred thousand population in 1914—a decrease of a little more than 35 per cent, amounting to the saving of nearly 100,000 lives annually. Measles, scarlet fever, and whooping-cough have decreased about 25 per cent in this period of time. Diphtheria, on account of the discovery of antitoxin, decreased 80 per cent, an equivalent of 80,000 lives saved annually.

The following table, which applies only to those States that in 1900 were in the Registration Area (that is, with accurate systems of recording deaths), is interesting in this connection:

COMPARATIVE DEATH RATES BY STATES. 1900-1911.

	Death Rate for 1900	Death Rate for 1911
States included in registration area of 1900	17.0	14.6
Connecticut	17.4	14.8
District of Columbia	24.4	18.9
Indiana	14.4	12.3
Maine	14.9	13.0
Massachusetts	18.1	15.0
Michigan	13.9	12.4
New Hampshire	16.3	14.2
New Jersey	18.2	15.1
New York	18.3	15.7
Rhode Island	20.9	15.7
Vermont	13.8	12.6

The important thing that this table brings out is (1) a reduction of the death rate in every one of the registration States, and (2) an average reduction of 2.4 deaths per thousand population.

DEVELOPMENT OF PUBLIC HEALTH WORK IN NORTH CAROLINA

In the seventies Dr. Thomas Fanning Wood of Wilmington caught the vision of the possibilities of public health work to North Carolina. How fully he grasped the far-reaching consequences of his idea, how clearly he saw the ever-growing hosts of lives saved as a result of his vision and inspiration, we shall never know. We do know that the vision never left him, and that under its sway he worked, through the *Medical Journal* which he edited and through the North Carolina State Medical Society, until his influence reached the people of the State in their General Assembly of 1877, with the effect that on February 12, 1877, the North Carolina State Board of Health was born. Ours was the twelfth State board of health to be established.

Without treating the development of the newly established board with that thoroughness that could be termed history, we think it enough to set down here in chronological order the principal events in the life and growth of the North Carolina State Board of Health.

1877. Board created. Consisted in the beginning of entire State Medical Society. Society acted through a committee. Annual appropriation, $100.

1878. First educational pamphlet issued. Subject, "Timely Aid for the Drowned and Suffocated." Annual appropriation, $100.

1879. The General Assembly reconstituted the Board of Health. Made it to consist of nine members: six appointed by the Governor, three elected by the State Medical Society. Term of office, five years. Dr. Thomas F. Wood elected first Secretary of the Board, May 21. Other legislative provisions: (1) Chemical examination of water, and (2) organization of county boards of health, composed of all regular practicing physicians and, in addition, the mayor of the county town, the chairman of the board of county commissioners, and the county surveyor. Four educational pamphlets issued. Subjects: "Disinfection, Drainage, Drinking-water, and Disinfectants"; "Sanitary Engineering"; "Methods of Performing Post-mortem Examinations"; "Limitation and Prevention of Diphtheria." Annual appropriation, $200.

1881. General Assembly passed a law requiring registration of vital statistics at annual tax listing; law ineffective. Annual appropriation, $200.

1885. General Assembly made county boards of health more efficient; allowed printing privileges not to exceed $250 annually. Annual appropriation, $2,000.

1886. Bulletin made its appearance in April. Pamphlet on "Care Eyes and Ears," by Dr. Richard H. Lewis, printed and distributed. Subsequent Legislature provided for extra edition of 10,000 copies for general distribution. Annual appropriation, $2,000.

1888. Yellow fever epidemic in Florida and refugees to western North Carolina demonstrated value of a Board of Health to cope with situation. Annual appropriation, $2,000.

1892. Dr. Thomas F. Wood, the Secretary of the Board, died August 22. Dr. Richard H. Lewis elected Secretary to succeed Dr. Thomas F. Wood, September 7. Annual appropriation, $2,000.

1893. Legislative provisions: (1) Laws improving the reporting of contagious diseases, (2) the protection of school children from epidemics, (3) protecting the purity of public water supplies, and (4) regulation of common carriers. Legislature provided that Governor appoint five of the nine members of the Board of Health, that the State Medical Society elect four, and that the term of office of the members of the State Board of Health be reduced from five to two years. The $250 printing limit was removed. Pamphlet on quarantine and disinfection was prepared and reprinted by many of the State papers. Annual appropriation, $2,000.

1894. A number of public health conferences were arranged and held in different towns of the State. Bulletin was increased from a mailing list of 800 to 1,200. Annual appropriation, $2,000.

1895. Dr. Albert Anderson and Dr. W. T. Pate were elected bacteriologists for the Board. Annual appropriation, $2,000.

1896. Board passed a resolution requiring chemical and bacteriological examinations of municipal water supplies. Dr. Venable of Chapel Hill undertook the chemical examination, and Drs. Anderson and Pate the bacteriological examination. Board also directed Mr. John C. Chase, the engineer member, to inspect all municipal water plants in the State. Annual appropriation, $2,000.

1897. General Assembly enacted law requiring county superintendents of health to be elected by county commissioners, and reduced term of office to one year. Annual appropriation, $2,000.

1899. General Assembly improved the laws protecting public water supplies. Smallpox prevailed extensively in the State. Dr. Henry F. Long, and later, on Dr. Long's resignation, Dr. Joshua Tayloe were employed to travel over the State, consulting with and advising the local sanitary authorities as to proper means for protecting the public. Annual appropriation, $2,000.

1900. State Board of Agriculture, on request of State Board of Health, agreed to examine samples of water from public water supplies until Board of Health could provide its own examiner. Annual appropriation, $2,000.

1901. State Board of Embalmers, with representatives of State Board of Health, established. County health work placed in the hands of county sanitary committees composed of county commissioners and two physicians which commissioners elected to serve with them. Term of office of county superintendent of health made two years. Annual appropriation, $2,000.

1903. General Assembly enacted law permitting Board of Health to charge $5 for each analysis of a public water supply, this fee to be used in paying Department of Agriculture for services of examiner. Dr. C. W. Stiles, U. S. P. H. S., before the State Medical Society at Hot Springs called attention to prevalence of hookworm disease in the South. Dr. J. L. Nicholson and Dr. W. S. Rankin, working under State Board of Health during fall of 1903 and spring of 1904, showed great prevalence of this disease in North Carolina. Annual appropriation, $2,000.

1904. A stenographer was employed. One hundred and twenty thousand pamphlets on tuberculosis were printed and distributed. There was a renewal and an extension of coöperative work between the Board of Health and the State press, a number of articles dealing with hygienic and sanitary subjects being furnished the papers and published in them. Annual appropriation, $2,000.

1905. General Assembly established State Laboratory of Hygiene; imposed water tax of $64 on all public water companies; voted $600 annually for support of Laboratory. Small appropriation made it necessary for the Department of Agriculture to continue to assist State Board of Health. Annual appropriation, $2,600.

1906. The North Carolina Association for the Study and Prevention of Tuberculosis was organized. Annual appropriation, $2,600.

1907. Two thousand dollars appropriated for the State Laboratory of Hygiene. Pasteur treatment provided. State sanatorium for treatment of tuberculosis founded: $15,000 appropriated for permanent improvements and $5,000 for maintenance. A law requiring the separation of tuberculous prisoners from other prisoners was enacted. Annual appropriation, $4,000.

1908. January 1, Dr. C. A. Shore became Director of State Laboratory of Hygiene. Annual appropriation, $4,000.

1909. General Assembly provided for (1) whole-time State Health Officer; (2) collection of vital statistics of towns having a population of 1,000 or over; (3) that all public water companies file plans and specifications of their plants with the State Board of Health, and that the State Board of Health pass necessary rules and regulations for the care of public watersheds and plants and furnish such rules and regulations and other advice to those having charge of public water supplies; (5) that counties provide free diphtheria antitoxin for county indigents; and (6) that the maintenance appropriation for the Sanatorium be increased from $5,000 to $7,500, and an additional $30,000 be granted for permanent improvements. Dr. Richard H. Lewis resigned as Secretary of the Board, and Dr. W. S. Rankin was elected as his successor, beginning his official work July 1. Annual appropriation, $10,500.

1910. General effort to interest the people and State organizations in public health work. Bulletin increased from 3,500 edition to 10,500 edition. Addresses on public health work delivered to Conference of County Superintendents of Schools, State Federation of Women's Clubs, State Press Association, and Sanitary Sunday observed in April. Dr. John A. Ferrell elected, February, Assistant Secretary for Hookworm Eradication; began work under State Board of Health and Rockefeller Sanitary Commission. First effort in the eradication of hookworm disease was to interest school teachers in the disease and through their assistance examine and treat the children, and thereby reach the community. Three bottled spring waters sold on the market, examined, found polluted, and public attention called to the pollution. Annual appropriation, $10,500.

1911. Legislature established county boards of health to take the place of the county sanitary committees; county board of health composed of chairman board of county commissioners, county superintendent of schools, mayor of county town, and two physicians selected by the three county officials to serve with them. Legislature also abolished quarantine for smallpox and improved the quarantine laws. One thousand dollars annually appropriated to contract with antitoxin manufacturers for State supply of high-grade diphtheria antitoxin, with result that price of antitoxin was cut to one-fourth former price, saving the citizens of the State over $30,000 annually. Bulletin increased from 11,500 copies to 20,000 copies each edition; closer coöperation with press of State developed; regular weekly press articles prepared and sent to papers; increase in number of popular pamphlets for distribution. Hookworm work this year largely educational through the school forces and investigative through county dispensaries; thousands of children found infected and treated. Strong sentiment began to make itself felt for better health work by counties, four counties employing whole-time county health officers. Maintenance appropriation for State Sanatorium increased to $12,500, with $20,000 voted for permanent improvements. Annual appropriation, $22,500.

1912. Bulletin increased to 40,000 edition; number of popular pamphlets dealing with different diseases increased; press work improved; educational work of Board along all lines amplified. Secretary of Board of Health called attention of conjoint meeting of State Medical Society and State Board of Health to the relative importance of health problems and the bearing of this subject upon the proper apportionment of health funds; instrumental in passing a resolution to the effect that pellagra was an interstate problem, not a State problem, and requesting the Federal Government to deal with pellagra as a Federal problem; resolution responsible, to considerable extent, for successful effort on part of Hon. John M. Faison's securing Congressional appropriation of $45,000 for the study of pellagra by the Federal Government. Hookworm work extended and county funds appropriated to supplement State and Rockefeller Foundation for this work. Annual appropriation, $22,500.

1913. General Assembly passed Model Vital Statistics Law with $10,000 appropriation for its enforcement. County superintendents of health changed to either county physician or county health officer. Educational efforts of Board continued and enlarged. Hookworm work along same line as year before increased in amount. Dr. John A. Ferrell resigned as Assistant Secretary to accept position with the central office of the Rockefeller Sanitary Commission in Washington, D. C. Dr. C. L. Pridgen succeeded Dr. Ferrell. The movement for improved county health work had by this time resulted in ten counties electing whole-time county health officers. The State Sanatorium for Treatment of Tuberculosis turned over by Extra Session of 1913 to the management of State Board of Health. Annual appropriation, $40,500.

1914. Preceding work of the Board continued. Board of Health took over management of Sanatorium; started out under many difficulties on account of the institution owing many debts and the appropriation being limited. Hookworm work changed to community work directed to the installation of sanitary privies in all homes. Laboratory began to produce and distribute free antityphoid vaccine. Dr. C. L. Pridgen resigned as Director Hookworm Eradication, and Dr. W. P. Jacocks succeeded him. Annual appropriation, $40,500.

1915. General Assembly makes State vital statistics law conform to National model by requiring burial permits in rural communities; enacts legislation permitting county commissioners and towns and cities to appropriate money for support of tuberculous citizens in State Sanatorium; provides $15,000 for purchase and building of antitoxin plant; appropriates $60,000 for payment of Sanatorium debts and new buildings and other improvements, and $25,000 annually for maintenance and $10,000 for extension antituberculosis work. Educational work greatly extended: Bulletin now 47,000; traveling public health exhibit shown at fairs and other assemblages; press work greatly developed through employment of journalist for whole time; stock lectures with lantern slides supplied public speakers in different parts of the State. Community soil pollution work under Dr. W. P. Jacocks stops in May, and Bureau of County Health Work with Dr. G. M. Cooper at its head, succeeds, beginning work in June. Considerable amount of work done for improvement of prison conditions. The unit system of county health work gets a good start: over 52,000 people given three complete vaccinations against typhoid fever, and medical inspection of schools put on in one county. Annual appropriation, $50,500.

1916. North Carolina was admitted to the Registration Area. To the educational agencies of the Board was added a self-supporting moving picture health show. Many saw this show during the year, and, seeing, believed in health work as never before. Bulletin had to be discontinued temporarily for lack of printing funds, but before discontinuance reached 51,000 edition. Coöperation with University in developing a plan and putting on a home post-graduate course in medicine, giving first course to 169 doctors. Put into operation an optional system of hotel inspection, with grading and publishing scores. Continued unit system of county health work, giving three antityphoid injections to 48,000, making 100,000 immunized in summers of 1915 and 1916. Did complete medical inspection of five counties and with inspection a large amount of educational work as to sanitary and hygienic living. Secured effort by Federal Children's Bureau to develop unit of child hygiene work, the Bureau using two employees to work in Cumberland and Swain counties for about eight months. Laboratory of Hygiene buys land and erects its own building. Sanatorium making a decided impression on the State. Annual appropriation, $55,500.

In addition to the regular appropriation, as above given, the Laboratory of Hygiene has received, in accordance with the original act, fees for examination of pathological specimens submitted by physicians; also a tax on all water companies of $64 annually for the examination of monthly samples of water, and, since 1907, a small amount for administering the Pasteur treatment to persons bitten by rabid animals. Receipts from these sources began to come in in 1905. The annual receipts from these sources for the various years have been as shown in the following table:

1905	$ 3,425.27
1906	3,425.27
1907	4,887.97
1908	4,887.97
1909	5,196.54
1910	5,196.54
1911	6,271.39
1912	6,271.39
1913	6,118.94
1914	6,118.94
1915	8,541.72
1916	8,541.72

REVENUE BASIS STATE BOARD OF HEALTH SINCE ESTABLISHMENT.

Year	Annual Appropriation	Laboratory Fees and Taxes	Total
1877	$ 100.00	$	$ 100.00
1878	100.00		100.00
1879	200.00		100.00
1881	200.00		200.00
1885	2,000.00		2,000.00
1886	2,000.00		2,000.00
1888	2,000.00		2,000.00
1892	2,000.00		2,000.00
1893	2,000.00		2,000.00
1894	2,000.00		2,000.00
1895	2,000.00		2,000.00
1896	2,000.00		2,000.00
1897	2,000.00		2,000.00
1899	2,000.00		2,000.00
1900	2,000.00		2,000.00
1901	2,000.00		2,000.00
1903	2,000.00		2,000.00
1904	2,000.00		2,000.00
1905	2,600.00	3,425.27	6,055.27
1906	2,600.00	3,425.27	6,055.27
1907	4,000.00	4,887.97	8,887.97
1908	4,000.00	4,887.97	8,887.97
1909	10,500.00	5,196.54	15,696.54
1910	10,500.00	5,196.54	15,696.54
1911	22,500.00	6,271.39	28,771.39
1912	22,500.00	6,271.39	28,771.39
1913	40,500.00	6,118.94	46,618.94
1914	40,500.00	6,118.94	46,618.94
1915	50,500.00	8,541.72	59,041,72
1916	50,500.00	8,541.72	59,041.72

EXPENDITURE FOR PREVENTION OF DISEASE COMPARATIVELY CONSIDERED

The mind grasps weights, sizes, and expenses—in fact, almost everything—through associations or comparisons. Measurements imply comparisons; therefore, to appreciate the amount expended by North Carolina for the prevention of disease it may be well to make certain comparisons.

The following table, showing the *per capita* State expenditures for public health work, was compiled by Dr. Charles V. Chapin, one of the best known health officers of this country, for the American Medical Association after making a careful survey, at considerable expense to the Association, of the work of the State boards of health of the Union.

PER CAPITA EXPENDITURE.

	Cents		*Cents*
Florida	15.21	Colorado	2.19
Pennsylvania	12.70	Virginia	2.09
Maryland	10.54	Maine	1.95
Vermont	9.27	Ohio	1.80
Nevada	7.59	Illinois	1.78
Montana	5.45	Oregon	1.78
Idaho	5.22	Oklahoma	1.61
Massachusetts	4.95	Wisconsin	1.56
Louisiana	4.93	North Dakota	1.48
New Hampshire	4.81	Michigan	1.48
New Jersey	4.47	Iowa	1.46
Delaware	4.04	South Dakota	1.43
California	3.96	Kentucky	1.27
Arizona	3.76	Wyoming	1.24
Minnesota	3.25	Georgia	1.21
Rhode Island	3.14	Texas	1.13
Utah	2.93	Alabama	1.11
Kansas	2.60	Washington	1.08
New York	2.87	Mississippi	1.20
North Carolina	2.60	West Virginia	1.02
Indiana	2.32	Missouri	.86
South Carolina	2.27	Nebraska	.85
Connecticut	2.24	Tennessee	.73
Arkansas	.53		

Chapin's Report shows North Carolina twentieth in per capita expenditure for public health work; the same report shows North Carolina twelfth in efficiency.

North Carolina expends $650,000 annually for the care of her insane and delinquents, and $55,500 annually for prevention. Much of insanity and delinquency has a preventable basis. Where the State spends $1 for the prevention of disease it spends $11.60 for the care of the insane and delinquent. Sixteen per cent of the insanity is due to syphilis. This means that there are 500 insane people in our asylums as the result of syphilis alone. The annual per capita cost of these 500 people is $170. Therefore, for the care of the syphilitic insane alone the State is spending 500 x $170, a total of $85,000 a year. Twenty per cent of insanity is traceable to alcohol. If this percentage holds for North Carolina, we have 600 insane in our asylums as the result of alcohol, the annual per capita cost being $170, making our bill for taking care of our alcoholic insane 600 x $170, a total of $102,000 a year.

The General Assembly of Massachusetts of 1915 appointed a committee to investigate the cost to the State of taking care of the syphilitic insane in the State institutions. This committee found that syphilis was costing the State of Massachusetts through its syphilitic insane alone $450,000 a year. On this finding the committee recommended to the General Assembly that the sum of $10,000 be appropriated for the purpose of experimentation in the hope of finding a way to make a cheaper remedy than salvarsan, the specific remedy for syphilis and the cost of which is about $5 a dose.

The saying that an ounce of prevention is worth a pound of cure is hackneyed, but it lacks a lot of being worn out.

WHAT THE BOARD OF HEALTH IS DOING WITH ITS MONEY

The following was prepared for and is taken from the Democratic Handbook for the year 1916:

DIVIDENDS ON INVESTMENTS IN PUBLIC HEALTH

Item No. 1.—The State Laboratory of Hygiene examines annually 5,000 microscopic specimens, which would cost the people and the physicians of this State, if examined in other laboratories, $7,500. This $7,500 is one dividend that is paid on the State investment of $59,000 in the health of her people.

Item No. 2.—The State Laboratory of Hygiene examined last year 3,289 samples of drinking-water. These analyses made by other State laboratories, or by private laboratories, would have cost our State $16,445. This is a second dividend paid on the State's investment of $59,000 in the health of her people.

Item No. 3.—The State Laboratory of Hygiene treated last year 175 citizens of North Carolina who had been bitten by rabid animals. It would have cost the 175 citizens of the State $10,000 to have secured the Pasteur treatment outside of the State. This $10,000 is a third dividend paid on the State's investment of $59,000 in the health of her people.

Item No. 4.—Before the State Laboratory began to supply typhoid vaccine free to the people, the vaccine, for each immunization, cost $1.50, and consequently relatively few people were immunized. With free vaccine there will probably be at least 100,000 to 125,000 vaccinations this year, on which will be saved $1.50 each, or a total of not less than $150,000, which is a fourth dividend on the State's investment of $59,000 in the public health.

Item No. 5.—The General Assembly of 1911 gave the State Board of Health the authority to contract with those manufacturers of diphtheria antitoxin that hold a United States license for a State supply of antitoxin to be purchased from the lowest bidder by the State Laboratory of Hygiene and distributed through antitoxin stations in the various counties to the people at exactly the cost of the antitoxin at the State rate. We might say right here that the quality of the antitoxin is guaranteed by the United States Government. Antitoxin is sold in packages, which are graded according to the units of potency per package, into packages of 1,000, 3,000, and 5,000 units. The prices of these packages of antitoxin, before this arrangement was made, were as follows:

1,000 units	$2.00
3,000 units	5.00
5,000 units	7.50

Under the present arrangement the same antitoxin can be purchased in North Carolina at the following prices:

1,000 units	$0.50
3,000 units	1.35
5,000 units	1.95

Estimating the amount of saving on this vital necessity from the amount of antitoxin distributed per 100,000 population by the States keeping such records, and on the difference in cost of antitoxin, this law is saving the State annually at least $30,000. This is a fifth dividend paid on the State's investment of $59,000 in the State's health.

Item No. 6.—In 1911 the State Board of Health was instrumental in securing from the General Assembly a law making the quarantine of smallpox optional with the counties, and giving the right to the State Board of Health of advertising that no quarantine be established except under exceptional circumstances. An inquiry sent to county physicians the year before this law was passed showed that there was annually 7,500 cases of smallpox in North Carolina, with a cost for quarantine of $66,000 a year. An inquiry sent to county physicians one year after this law went into effect showed a decline in the number of cases of smallpox from 7,500 to 3,300 and a decline in the public cost of the disease from $66,000 to $2,600. It is reasonable to conclude that through the enactment of this law the State Board of Health is saving the State every year something like $50,000, and at the same time more effectually controlling the disease. This $50,000 may therefore be considered as a sixth dividend paid on the State's investment of $59,000 in the public health.

Item No. 7.—The General Assembly of 1909 enacted a law requiring that all plans and specifications for water-works and sewerage systems should be submitted to and approved by the State Board of Health before being accepted by the municipalities for which the plans and specifications were designed. This law has safeguarded the municipalities of our State against the work of cheap engineers and contractors. For example, in one North Carolina town before this law went into operation, a public water supply was constructed without being approved by the State Board of Health and, on account of the faulty location of the water supply, it was necessary to abandon it, so that that town lost from $10,000 to $15,000 in its investment. Many such losses have been saved the municipalities of the State by this law which requires all plans and specifications for water supplies and sewerage systems to be submitted to and approved by the State Board of Health before acceptance.

Item No. 8.—A continuous, well-organized, and extensive educational campaign against insanitary and unhygienic conditions has been waged. This campaign has embraced the following measures: (*a*) The issuance of an educational monthly Bulletin of 51,000 copies; (*b*) the furnishing of newspaper articles, directed toward the improvement of sanitary and hygienic conditions, to 350 daily and weekly newspapers; (*c*) the publication and distribution, upon request, of health literature, placards, leaflets, etc.; (*d*) an extensive correspondence with the people of the State in regard to the prevention of unnecessary disease; (*e*) the furnishing of illustrated or stereopticon lanterns and appropriate slides for public lectures to teachers, doctors, Y. M. C. A. workers, social workers, and others; and lastly, (*f*) the equipment and operation of a motion picture outfit for teaching disease prevention.

Item No. 9.—A careful supervision has been maintained over all public water supplies of the State. This supervision has been carried on through a knowledge of the watersheds and surroundings of wells, as shown by maps in the office, through a knowledge of sanitary conditions on the watersheds, as shown through quarterly reports to the office and as shown through monthly, weekly, or even daily analyses of the public water supplies. No one can estimate the number of epidemics, the number of cases of sickness, and the number of deaths that have been prevented through this supervision.

Item No. 10.—One hundred and forty-seven schools have been visited by competent medical inspectors, 10,108 children examined, 3,250 children found suffering from minor defects which sooner or later would develop into a serious menace to health, and at this time over 800 of those afflicted have been treated and cured.

Item No. 11.—The State Board of Health, by its educational activities, has fostered, strengthened, and directed an interest on the part of the counties in local health work, so that today North Carolina has more whole-time county health officers than any State in the Union. Local rural health work, through the eleven whole-time county health officers and through the development of the unit system of county health work, now in active process of development, is far ahead of such work in the other States of the Union with only two or three exceptions. The proper development of county health work is bringing sanitary instruction and sanitary government closer to the people, and will result in the saving of thousands of lives that would be lost without active and effective county sanitary administration.

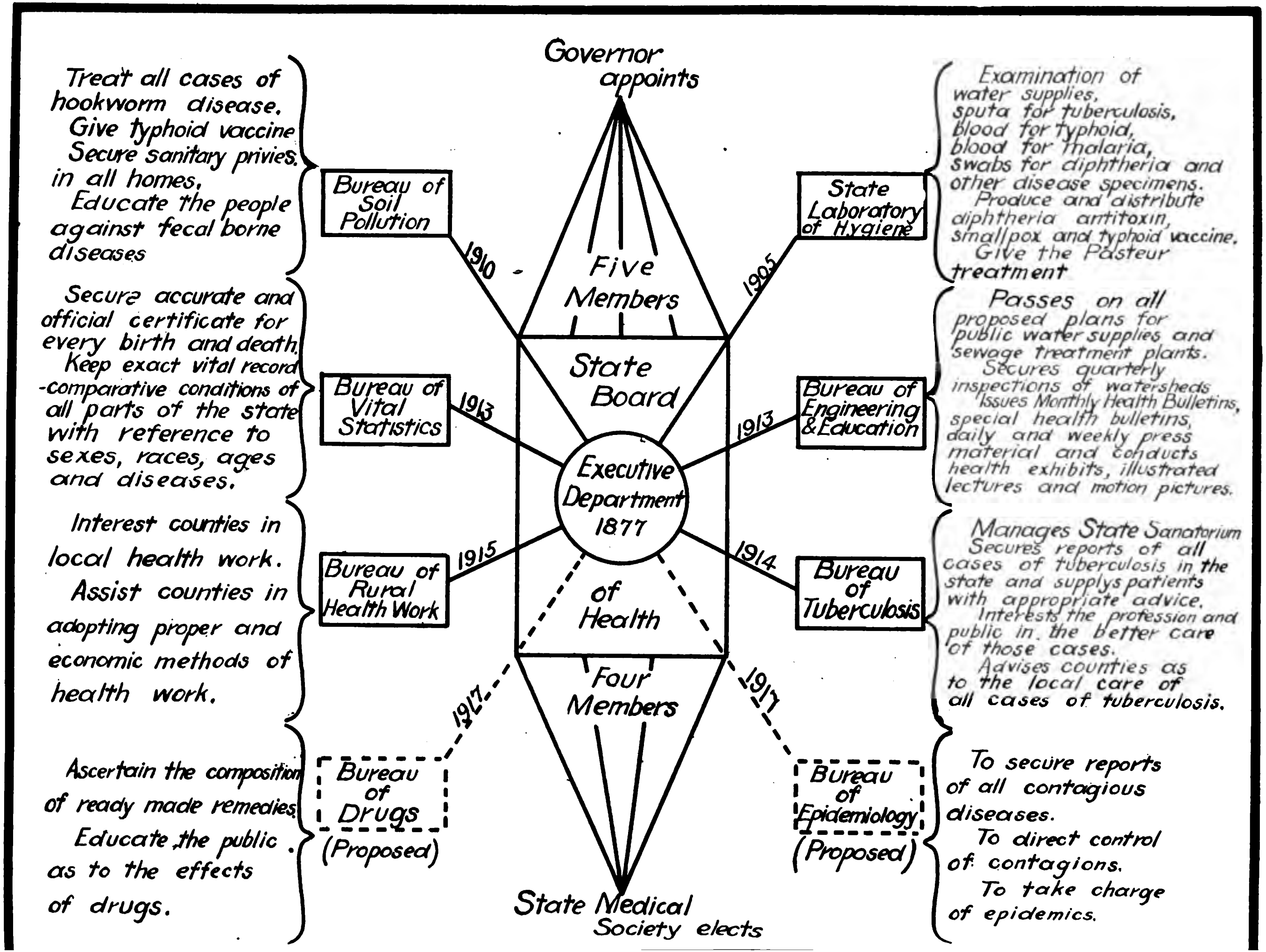
Item No. 12.—Probably the most important, certainly the most fundamental, health measure that any State may enact was passed by the General Assembly of 1913. This measure is known as the Vital Statistics Law.

For each individual the Vital Statistics Law requires the State to keep a complete and permanent record, in a fire-proof vault, of the two principal events in the individual's life, his or her birth and death. The State believes that none of its citizens are so humble that North Carolina should not take official notice of their coming and going and preserve such records for all time. By such records the children and grandchildren of the State will be enabled to keep track of their ancestors and their relatives; will be enabled to prove their age in the courts, and thereby their right to suffrage, their right to marriage, their right to insurance, their right to work in various industries, their right to inheritances, etc.

For the State this law means that the number of deaths per thousand of the population occurring in North Carolina, or in any county or township or town or city of the State, shall be known; it means that the number of deaths from various diseases per thousand of the population of the State, or any part of the State, shall be recorded; that the number of births per thousand of the population in the State, in the counties, in any part or subdivision of the State, shall be known; that by comparing such figures with similar figures from the other States of the Union, the people of this State, the people of other States and of the world, may know, not guess, what health conditions in North Carolina are.

And best of all, the Vital Statistics Law has shown and caused to be published on the authority of the United States Government the fact that this State is one of the healthiest in the Union, as demonstrated by a death rate of 13.3 per thousand of the population per year and a birth rate of 31.0 per thousand of the population per year. Our high birth rate of 31.0 per thousand of our population, coupled with our low death rate, gives North Carolina an enviable health record.

LET THOSE WHO THINK NORTH CAROLINA IS SPENDING TOO MUCH ON PUBLIC HEALTH SHOW WHERE THE STATE GETS A BIGGER RETURN ON OTHER INVESTMENTS.


Governor appoints
Five Members
State Board
Executive Department 1877
of Health
Four Members
State Medical Society elects
1905
State Laboratory of Hygiene
Examination of water supplies, sputa for tuberculosis, blood for typhoid, blood for malaria, swabs for diphtheria and other disease specimens.
Produce and distribute diphtheria antitoxin, smallpox and typhoid vaccine.
Give the Pasteur treatment
1913
Bureau of Engineering & Education
Passes on all proposed plans for public water supplies and sewage treatment plants.
Secures quarterly inspections of watersheds
Issues Monthly Health Bulletins, special health bulletins, daily and weekly press material and conducts health exhibits, illustrated lectures and motion pictures.
1914
Bureau of Tuberculosis
Manages State Sanatorium
Secures reports of all cases of tuberculosis in the state and supplys patients with appropriate advice.
Interests the profession and public in the better care of those cases.
Advises counties as to the local care of all cases of tuberculosis.
1917
Bureau of Epidemiology (Proposed)
To secure reports of all contagious diseases.
To direct control of contagions.
To take charge of epidemics.
1910
Bureau of Soil Pollution
Treat all cases of hookworm disease.
Give typhoid vaccine
Secure sanitary privies in all homes.
Educate the people against fecal borne diseases
1913
Bureau of Vital Statistics
Secure accurate and official certificate for every birth and death.
Keep exact vital record -comparative conditions of all parts of the state with reference to sexes, races, ages and diseases.
1915
Bureau of Rural Health Work
Interest counties in local health work.
Assist counties in adopting proper and economic methods of health work.
1917
Bureau of Drugs (Proposed)
Ascertain the composition of ready made remedies.
Educate the public as to the effects of drugs.

PRESENT ORGANIZATION OF THE NORTH CAROLINA STATE BOARD OF HEALTH

The North Carolina State Board of Health consists of the Board proper and the executive staff.

The Board of Health, as indicated diagramatically on page 22, consists of nine members, five of whom are appointed by the Governor and four of whom are elected by the North Carolina State Medical Society. The organization of this body embodies two important administrative principles: (1) stability of organization and permanency of policies; (2) partnership of State and medical profession in the conservation of human life.

The stability of the organizaton of the Board of Health depends fundamentally upon the Board's freedom from political tinkering. The divorcement of the State Board of Health from politics depends largely upon the way by which the members of the Board are selected. Sudden and marked changes in the personnel of the Board under the present plan of organization are impossible: First, because the members of the Board of Health are appointed for terms of six years and their terms of service expire, not in the same year, but in different years. The appointment of new members of the Board is, therefore, gradual and not sudden. Second, the Board of Health is selected by two parties: one, the Governor, and the other, the State Medical Society. It is far less likely that two parties naming a Board would be dominated by political considerations than where one party names the Board. This division of the appointive and elective power and this provision for the slow and gradual exercise of that power by two parties guarantees the State Board of Health against the sudden changes associated with a purely political organization. The Board of Health is stable; its members come and go, but as an organized body it stays.

This stability or organization is the responsible factor for the permanency of policies adopted by the Board. Political boards elected or appointed for two years or four years are naturally inclined to adopt two- and four-year policies, to attempt to make the best showing during the short term of their official life. Their administrative thoughts and plans are largely defined by the time limitations of their administration. This is not true of self-perpetuating bodies such as the Board of Health, that, as legally constituted, has no limit to its life.

The second administrative principle embodied in the organization of the State Board of Health is a recognition by the State of the fundamental relation of the medical profession to the work of prevention. The State recognizes (1) the debt of society to that profession by which nearly all of the experimentation and discovery on which disease prevention is based, with the exception of the work of Pasteur, was contributed; (2) the interest of organized medicine in the conservation of human life and the peculiar ability of organized medicine to advise the State as to the methods of prevention; and (3) the necessity of securing first information in regard to the occurrence of deaths and their causes and the appearances of epidemics from the medical profession.

The executive staff of the State Board of Health may be divided into the executive office and the various bureaus or special divisions.

The Executive Office.—The executive officer of the State Board of Health should be a technical man and should be selected for his fitness for a technical position. It is, therefore, right that the Secretary of the State Board of Health, or the executive officer, should be selected by a specially qualified committee, that is, the State Board of Health, and not elected in a general election, as would be the case if the office were a political one. The six-year term of office for which the Secretary is elected is in accordance with the idea of permanency of policies. The most important work of the Secretary is (1) the formulation of the important State health policies for submission to the Board for their action, and, when approved, for submission to the General Assembly; (2) to act for the Board when it is not in session; and (3) to supervise and correlate the work of the bureaus.

The Bureaus or Special Divisions of the Executive Staff.—The work of the State Board of Health is large and varied and calls for executive heads of special talent and with special training; therefore, in accordance with the administrative practice of other States and of other departments of this State Government, the larger and more important State Board of Health policies, such as the equipment and direction of the Laboratory of Hygiene, the problem of treating a large number of consumptives and dealing with the whole State problem of tuberculosis, and the problem of popular education along health lines, and the problem of supervising and assisting counties in adopting economic and efficient measures of local sanitation, and the problem of gathering, correcting, properly classifying and publishing the death certificates of 33,000 decedents every year and the birth certificates of 80,000 births every year, are delegated to bureaus or special divisions in the executive work, and these bureaus are held responsible for the performance of the tasks intrusted to them. This division of the executive staff into special units or bureaus has the additional advantage of giving individualism to the work of each bureau and creating a laudible pride and a healthy rivalry among the various bureaus engaged in the general work of the Board.

The Correlation of the Work of the Board.—This is best brought out by an examination of the simple diagram shown on page 22. While considerable individualism is given to each division of the executive staff, the coördination of the work, the compactness of the work of the Board as a whole, is brought about through the relation of the bureaus to one another through the executive office of the Board. Moreover, it is just as important that the work of the bureaus should be properly correlated as it is important that each bureau should be given as much individualism as is consistent with the principles of efficient administration. Referring to the correlated activities of the Board, the Secretary recently said before the conjoint session of the State Board of Health and the State Medical Society: "The Sanatorium by itself is capable of great accomplishments; but the Sanatorium supported and assisted by the influence and activities of the other executive divisions of the State Board of Health is capable of far greater accomplishments. On the other hand, the loss of the State Sanatorium to the State Board of Health would cripple the entire organization. And again, the Bureau of Vital Statistics could never have come into existence and could not now maintain itself without the public educational activities of the Board. On the other hand, the Bureau of Education would be seriously handicapped without those fundamental facts obtained through the Bureau of Vital Statistics, upon which health work is based. And still again, the State Laboratory of Hygiene, without the general influence of the other divisions of the work, could not have made the wonderful progress it has made during the past years. On the other hand, the other work of the Board would have been greatly impaired without the splendid support of the Laboratory. The full benefits derivable from typhoid vaccination depend upon the coöperation of three divisions: the production of vaccine by the Laboratory, the creation of a demand for vaccine or the popularization of typhoid vaccination by the Bureau of Education, and the provision for free public vaccination by the Bureau of Rural Sanitation. And so I might continue these illustrations, but I have said enough to make it clear that to the different divisions of the executive staff of the Board, the old adage, 'United we stand; divided we fall,' applies with full force."

BIENNIAL WORK OF THE EXECUTIVE STAFF

EXECUTIVE OFFICE

Routine Work.—The routine work of the executive office is best shown in the following table, which is a twelve-months estimate based upon eleven monthly reports. The estimate was necessary because these monthly reports were not begun until January 1, 1916, and we could not wait without a considerable delay in the printing of the biennial report for the December monthly report.

Letters received			3,888
Letters written:	Individual		3,828
Articles written:	Newspaper	4; words	1,200
	Bulletins	3; words	10,400
	Official pamphlets	3; words	7,400
	Other publications	6; words	25,800
Forms and placards prepared			2
Addresses delivered:	Number delivered		38
	Total audience		4,305
Inspections:	State institutions		10
	County institutions		2
	Hotels		15
Epidemics:	Conferences with local authorities		9
	Supervision of		4
Number units health work adopted			7
Number days spent out of office on official business			115

Special Work.—While certain parts of the special work are included in the table on routine work, there is much of the special work of such nature that it cannot be represented in the table showing the routine work of the office. Under this heading may be mentioned the following special items:

1. During the beginning and ending of each biennial period, covering altogether a period of about four months, much of the Secretary's time is occupied with the consideration of needed health legislation. Such consideration often demands a thorough examination of the literature with reference to any particular problem concerning which legislation is contemplated, and seeing those interested (members of the State Board of Health and members of the General Assembly) in such legislation, drawing the necessary bills to be introduced in the General Assembly, and, during the meeting of the General Assembly, explaining to committees and to individual members of the Assembly the importance of the proposed legislation. Any one who has had any experience, directly or indirectly, in matters of legislation will understand that this kind of work cannot be measured in the hours that are consumed in actually doing the work.

2. It falls to the share of the executive office to assist in the work of new bureaus, to assist a bureau in the inauguration of new work, and to give temporary help to a bureau that is encountering some unexpected difficulty in its work. In the summer of 1915, with the Bureau of Rural Sanitation beginning its work the first of June, much of the time of the executive office was given in assisting that bureau in getting started. During the same summer a considerable amount of reorganization in the Bureau of Vital Statistics was

needed, and a certain amount of the time of the executive office was required in assisting that bureau.

3. During the past two years the executice office has secured valuable coöperation from two divisions of the Federal Government in the health work in this State. During the summer of 1915 the United States Public Health Service used a force of from three to five health officers in sanitary work in Orange County over a period of about six months. The piece of work done was very thorough, and a great deal of sanitary improvement must have resulted. During the year 1916 the Federal Children's Bureau, under Miss Julia C. Lathrop, and represented in our State by Dr. Frances Sage Bradley and her assistant, Miss Williamson, has done some valuable health work in Cumberland County. The object of the work of the Federal Children's Bureau in North Carolina has been to ascertain as near as possible the exact sanitary and hygienic conditions bearing on child life in rural North Carolina, and, on the result of their findings, to work out some economic and efficient plan by which the county, or the county and State, may coöperate in reducing infant mortality and improving the health of children generally. The executive office has also been instrumental in securing the promise of the United States Public Health Service to detail one of their officers to work in Edgecombe County for from one, two, three, or four years, the county bearing the actual expense of the work, not to exceed, annually, $1,500, with the object of developing a standard plan of county health administration.

4. The executive office, in coöperation with Dr. Joseph Hyde Pratt, State Geologist and chairman of the State Highway Commission, has given a great deal of study and work to the preparation and publishing of plans and specifications for sanitary convict camps, proper rules and regulations governing the care of such camps, and report forms to be made out by convict camp supervisors showing the physical condition of prisoners at regular intervals. This office and the chairman of the State Highway Commission became interested in this matter because of their opinion that the sanitary and hygienic care of prisoners in North Carolina is one of the most urgently needed reforms for our State. Investigation of the sanitary conditions in convict camps, based upon the score-card adopted by the State Highway Commission and this office, shows the average camp in this State to score between 50 and 60 out of a possible 100. While this particular piece of work of the executive office has apparently had little influence in bringing about needed prison reform in North Carolina, a high Federal official, who has made a special study of prison conditions in the United States, has pronounced the rules and regulations for the sanitary and hygienic care of prisoners and the architectural designs and specifications for the construction of prison camps as adopted, in many respects, the best general plan in this country.

5. During the past year the executive office has prepared sanitary rules and regulations governing the management of hotels, and a hotel score-card and a form of certificate to be given hotels by the State Board of Health showing their sanitary rating, and has put into execution a system of optional hotel inspection and grading. The optional feature of this plan, leaving it to the choice of the hotel manager as to whether or not he will have his hotel inspected and graded, is so generally acceded to by hotel managers that the plan is practically of as general application to the hotels of this State as if the inspection and rating were compulsory. While we have only begun this work,

and in the beginning have scored the hotels very lightly, we believe that in the inauguration of this policy of hotel inspection and published rating we will bring about, eventually, important sanitary improvements. A hotel is not a local institution, but a State institution, for the reason that the local people do not use the hotel, but the people from all parts of the State and from other States, and, therefore, as a State institution, capable, under certain conditions, of scattering disease not in a locality, but throughout the State, should come under the responsibility of the State Government rather than under the local government. This reasoning would not apply to boarding-houses or to restaurants, where, as a rule, the people of the community, and not the people of the State, get their meals.

6. In coöperation with the State University, the executive office planned and inaugurated a novel plan of home post-graduate medical study for the doctors of this State. The post-graduate course among physicians has two values: for the physician, it refreshes his scientific interest in his profession and makes his work more attractive, more efficient, and, therefore, more satisfactory; for the public, an improved profession means a decreasing death rate, better health. The fundamental principle of the plan of work adopted consists in bringing the teacher to the class instead of sending the class to the teacher. To illustrate: For 80 North Carolina doctors to go to Baltimore, Philadelphia, New York, or somewhere else, to take a six-weeks post-graduate course, say, in diseases of children, the total cost to the 80 doctors would be $32,000, or $400 apiece. This $400 per capita would include the loss of $225, the average six weeks income (that is, at the rate of $150 a month), $100 tuition for the right kind of a course, and $75 for railroad, hotel, and incidental expenses. To leave these 80 doctors in their practice and to bring the teachers of diseases of children to them can be done at a total expense of from $2,000 to $2,500, an assessment for each member of the class of about $30 instead of $400. These classes are organized as follows: From 8 to 20 doctors around the towns of A, B, C, D, E, and F, all of which are conveniently connected by railway and in the same section of the State, organize themselves into six sections of a class. The teacher brought from Boston or Chicago, a specialist in diseases of children, meets the section of the class in A, say, Monday at 11 o'clock, lectures to them from 11 to 12, and from 12 to 2 holds a clinic, that is, takes the sick children brought in by the members of the section, goes over their trouble with the section and prescribes for them. The total period of the class meeting is three hours. On Tuesday, the teacher holds the same kind of meeting with the section of the class in town B, and so on Wednesday, Thursday, Friday, and Saturday he meets the sections in towns C, D, E, and F, respectively. Both the University and the executive office of the Board of Health are intensely interested in this practical scheme for interesting and advancing our medical profession and thereby improving the public health, and we believe that this piece of work will in the end prove to be one of the most important pieces of work, not only for the State but also for other States, that we have undertaken.

STATE LABORATORY OF HYGIENE

Routine Work.—The routine work of the State Laboratory of Hygiene is shown in the following tables, which I take from the annual report of the

Secretary to the conjoint meeting of the State Board of Health and the State Medical Society:

GENERAL EXAMINATIONS.

Years	Water	Sputa	Widal	Para-typhoid	Diphtheria	Rabies	Malaria	Urine	Gonococci	Pathology	Miscella-neous	Totals	Growth, Per Cent
1909-10	1,680	516	264	------	377	148	69	92	34	88	25	3,293	61.
1910-11	1,920	771	460	------	364	159	119	58	52	39	20	3,962	20.3
1911-12	2,449	924	732	------	547	199	132	92	48	38	41	5,202	31.
1912-13	2,183	1,091	790	------	660	298	196	83	78	39	28	5,444	4.6
1913-14	2,988	1,473	1,094	------	593	371	292	133	92	28	24	7,088	30.
1914-15	4,669	1,605	1,382	------	896	297	340	177	105	73	50	9,594	35.
1915-16	3,289	1,694	1,392	167	1,358	279	268	152	94	58	60	8,811	— 8.1

DISTRIBUTION OF BIOLOGICAL PRODUCTS.

Years	Diphtheria Antitoxin	Typhoid Vaccine	Smallpox Vaccine
1913-14	9,254,000	30,000	----------
1914-15	11,006,000	137,211	----------
1915-16	12,385,200	456,180	5,261

DOSES ANTI-RABIC VACCINE ADMINISTERED.

Years	Doses
1909-10	3,950
1910-11	4,125
1911-12	4,875
1912-13	6,475
1913-14	5,775
1914-15	4,825
1915-16	4,375

The enormous amount of work and the great value of the work of the State Laboratory of Hygiene does not appear in the figures alone, large as they are. For the value of this work we refer the reader to pages 19 and 20, items 1, 2, 3, 4, and 5, of this report. The slight decline in the number of examinations made in the Laboratory for the year 1916 is accounted for as follows: First, the large number of water analyses made during the year 1914-15, a total of 4,660 examinations as indicated on the chart, was exceptional, and was due to certain special investigations being carried on by the Laboratory at the time. The total water analyses this year, 3,289, as compared with the number of examinations for 1913-14, 2,988, represent the natural growth. Second, the development of the biological department of the Laboratory and the growing public demand for biological products, especially for typhoid vaccine, much more than make up for the slight decline in the number of general examinations made by the Laboratory.

Special Work.—The Director of the Laboratory during the last year has given a great deal of careful attention to the purchase of land and the construction of a laboratory building and biological plant as provided for by a special act of the General Assembly of 1915. The new laboratory building is in a most desirable location with reference to freight facilities and street car lines, and in its construction and architectural arrangement is all that could be desired.

BUREAU OF ENGINEERING AND EDUCATION

Routine Work.—The following tabular estimate for the last twelve months, based upon eleven monthly reports, shows the work of this bureau for the past year:

Number newspapers and magazines received and reviewed	7,583
Letters and postals received	7,822
Letters written: Individual	3,884
Multigraph (forms, 14)	2,194
Total number	6,078
Articles written: Newspaper (308)	93,045
Bulletin	43,636
Official pamphlet (1)	1,500
Other publication (1)	4,000
Stock lectures: Given	171
Audience	21,978
Motion picture entertainments given	210
Total audience at above entertainments	50,482
Continuous motion picture entertainments at fairs	5
Total audience at above entertainments approximately	28,000
Plans and specifications modified:	
Water-works	3
Sewer systems	6
Plans and specifications disapproved:	
Water-works	2
Sewer systems	3
Plans and specifications approved:	
Water-works	6
Sewer systems	13
Watershed inspectors' reports examined	153
Traveling Public Health exhibits given (at fairs)	17
Special exhibits given (30 at fairs)	60
Approximate number seeing exhibits at 30 fairs	14,824
Monthly Health Bulletins mailed	309,000
Pamphlets distributed Leaflets distributed Placards distributed	284,715
Reports of water analyses examined and copied	1,208
Number days spent out of office on official business	40

Special Work.—While certain parts of the special work hereinafter considered are included in the tabulation of routine work, the tabulation does not and cannot express the significance of the educational work of this bureau.

Public Health Education.—Let us recall, in this connection, certain essentials. The *object* of public health work is to change habits and customs that interfere with the highest physical and mental development of the individual and the State. The *method* of public health work under present conditions is primarily educational. It is necessary not only to give the school children of today the principles of hygiene and sanitation that are to influence them as citizens of tomorrow, but it is necessary, by educational means, to reach the adult population who yesterday went through the schools without being taught those principles of human conservation which should influence them as neighbors and voters. The *means* for public health education may be divided into the means of public health education for the future citizens and the means of public health education for the present citizen.

For the future, the principal means of public health education should be the public school system. It should be impossible for a child to pass through the public schools of today without being taught the essential principles of disease prevention—self-preservation, the first law of nature. The public schools are doing a great deal more in educating the children towards higher hygienic and sanitary ideals, but they are still falling far short of meeting their vital responsibility in this matter.

For the present, the means of public health education have to do with the adult population, with the voters who make the general and local laws under which man has to live. To reach this adult population, we must first *interest* them in public hygiene, and, second, *inform* them as to what it is and how it is to be obtained.

To gain the interest of the general public, the following agencies are used by the North Carolina State Board of Health: A portable motion picture outfit suitable for work in rural districts, a series of illustrated stock lectures, traveling exhibits, and an extensive press service.

The Motion Picture Outfit.—The following extract from a newspaper article written by a reporter who had just seen the motion picture health entertainment will give some idea of its use:

> "Fairview . . . last night was accorded the distinction of seeing in its own midst the first moving picture show ever given in the country in this State. . . .
>
> "One hundred and forty-four people living a distance of 10 or 12 miles from Raleigh sat enthralled under the perfect picture, the drama of a sanitary regeneration. Warren H. Booker, assistant secretary to the Board, drove the department's automobile, which carries an extra engine to run the lights, and put on the show. To vary even a good thing, he interspersed his pictures on health with a Charlie Chaplin movie, and thus gave to the people who live afar a treat which Arthur Brisbane confesses himself never to have enjoyed. . . .
>
> "The pictures ran from 8:30 to 10:45. In the changing of reels the operator would insert a National anthem, a familiar hymn, or Tipperary, and on the big canvas the people could read the words and sing with all their hearts. They were long on 'Old Black Joe,' up on 'America,' unctuous on the hymns, but rather tenderfooted on Tipperary. Thus Booker was teaching religion, music, poetry, patriotism, and health—five in one, so to speak—and he held that crowd hours beyond its accustomed retiring time.
>
> "They wouldn't leave when it was over. Babies of two years rubbed their fat little arms over the sleepy little eyes, but wouldn't lie down. Now and then one fell by the wayside, was dropped on a cloak, and the show went on. Between reels short speeches were made and songs sung, and in that one night that single community enjoyed itself more than it has been able to do in a month of the usual round of neighborhood pleasures.
>
> "Mr. Booker put on a picture entitled 'Hope,' a tuberculosis story that started in the resentment of a little town against the suggestion that there was enough tuberculosis in it to justify a sanatorium for treatment of tubercular patients.
>
> "The town was horrified in a short while to know that the prettiest girl in the place had it. The canvas showed her declining health, her treatment in the hospital, her recovery and her return to her father and her lover. Then, it became interesting.

> "Then came the story of typhoid fever, a case that came as the result of too intimate association of pigs and people, bad dairy conditions, and the immemorial open well, 'Good enough for daddy, and good enough for his daddy, and good enough for me.' This case, treated successfully, was shown on the screen with the conversion of the fossil and the community clean-up campaign as the one sure preventive."

One of the best known physicians in the State said recently in regard to the moving picture health show:

> "The picture show campaign brought the people out, and from a standpoint of teaching health it did a great deal of good. It is really the only way to teach rural preventive medicine."

The motion picture health films reach, among others, a large class of people who do not go to school and who read very little, and to this group of people the principles of disease prevention are presented in a form they cannot fail to comprehend. The motion picture health outfit has been in use by the State Board of Health since March, 1916. At 210 entertainments, 50,482 people saw the health films and heard the lectures. During the five weeks when the outfit was engaged at the fairs, approximately 30,000 other people were reached.

The Illustrated Stock Lectures.—The illustrated stock lectures consist of lectures already written out on such subjects as tuberculosis, typhoid fever, patent medicines, care and feeding of babies, alcohol, prevention of blindness, eyes, ears, nose, and throat, and health and sanitation. Each of these lectures is illustrated by a set of lantern slides containing from 40 to 70 slides neatly packed in a case which may be shipped by parcel post. These outfits are furnished free of charge on application to Y. M. C. A. workers, teachers, preachers, and others who are interested in public health and wish to give illustrated lectures on some phase of hygiene, sanitation, or public health work. Where borrowers are not already provided with a stereopticon lantern in which to use the lantern slides, small portable lanterns, securely packed in padded shipping cases, are loaned free of charge. During the last two years approximately 402 of these lectures have been given and approximately 32,392 people have been reached in this way.

Traveling Exhibit.—The traveling exhibit is a presentation of the more important public health problems through charts and models, usually accompanied by a demonstrator. During the last two years 28 exhibits have been given in 24 places, and approximately 150,000 people have seen the exhibits.

Besides the large traveling exhibit, a number of smaller exhibits have been prepared for use by schools and for small community fairs.

Press Service.—The press service consists in sending out to the newspapers of the State a daily article of from 200 to 300 words—about one third of a column. The material sent out may be divided into three kinds: (1) that which has news value but no value in teaching sanitation and hygiene; (2) that which has both news value and value in teaching sanitation and hygiene; and (3) that which has no news value but which teaches sanitation and hygiene. The newspapers are more than generous in the use they make of this material; but we think we are correct in saying that the amount of the material used is in the order of the above classification. This is, however, not the fault of the newspapers so much as it is the demand of the people. The public is more interested in reading of the spectacular than of the every-day occurrences; more interested in a murder than in a death from typhoid fever or tuberculosis; more interested in news than in doctrine.

The attitude of the State press towards this phase of the work of the State Board of Health especially and toward the work of the Board generally is most cordial, and the State Board of Health cannot express its appreciation for this most valuable support and coöperation on the part of the newspapers in too strong terms. A large per cent of what success we have attained may be credited to the State press.

To inform the general public after we get them interested, after we create a desire, through the above mentioned agencies, to know the principles of self-preservation, our best educational agencies are the *Bulletin* and special pamphlets and leaflets.

The Bulletin of the State Board of Health for the last two years has gone to 51,000 North Carolina homes. It reaches a great many teachers, preachers, lawyers, business and professional men; but about 75 per cent of the homes reached are the homes of the average intelligent, progressive citizenship of the State, and in many of these homes the health *Bulletin* is the *only* publication received dealing to any extent with the subject of hygiene and public health.

The State Board of Health *Bulletin* is regarded among the public health officers of the country as one of the best, and by not a few as the best State health *Bulletin* in the Union. A comparison of the North Carolina State Board of Health *Bulletin* with the official organs of the other State Boards of Health will convince any one that the foregoing rather sweeping statement is not too strong. In fact, in a recent National survey of the educational activities of the various State Boards of Health, our *Bulletin* received a perfect score. Only two other bulletins, those of New York and Virginia, were scored perfect.

The *Bulletin* costs the State about one-half cent a copy, and, therefore, it costs the State only about 6 cents a year, three 2 cent postage stamps, to give this publication, the only publication that the people receive to tell them how to live, to its people. In going to 50,000 homes, the *Bulletin* reaches a total population of 300,000 people, about one-eighth of the total population of the State and about one-sixth of the white population of the State.

Unfortunately, we had to suspend, for the first time in twenty years, the publication of the *Bulletin* during the past year. The amount of printing allowed the State Board of Health has remained the same since 1911, six years, while the public demand for bulletins and leaflets and information regarding disease prevention has increased somewhere between 500 and 1,000 per cent. The General Assembly of 1915 was asked for a sufficient appropriation to have permitted the publication of the *Bulletin*, but refused to grant it, and so restricted the printing fund of the State Board of Health as to make it necessary to suspend publication of this important, not to say vital, publication. If money was ever saved at the spigot and lost at the bung it was in this restriction on the printing of the State Board of Health. The *Bulletin*, as we have said, costs only one-half cent a copy, 6 cents, to the average family for a whole year. The lowest average economic value placed on human life if $1,700 per capita. Saving 6 cents, three postage stamps, and losing the lives is the economic wisdom of being penny wise and pound foolish. The *Bulletin* ought to be sent to not less than 100,000 homes, and it is exceedingly doubtful whether the State can get a greater revenue from any other money spent than money expended in this way.

The *Bulletin* differs from newspaper public health work in that it deals exclusively with health topics, and deals with these subjects in a comprehensive and systematic way in which they cannot be presented through the two or three hundred-word newspaper article. The newspaper work is, primarily, to interest the public in self-preservation; secondarily, to inform them as to the means of self-preservation. The *Bulletin*, on the other hand, is primarily to inform the public in regard to the means of human conservation.

Special Pamphlets.—The State Board of Health keeps in stock a large number of pamphlets on special subjects, including all of the important preventable diseases, for distribution on request. The following table shows the subjects on which we have or have had special pamphlets and the number of these pamphlets distributed during 1915:

Tuberculosis	65,000
Typhoid	65,000
Flies	59,000
Privy	61,000
Baby	60,000
Cancer	20,000
Malaria	20,000
Health Catechism	17,000
Health Laws	2,000
Weak Eyes	1,600
Adenoids	2,000
Measles	3,000
Diphtheria	3,000
Disinfection	3,000
Scarlet Fever	3,000
Fly Placard	4,000
Typhoid Placard	4,000
Tuberculosis Placard	3,000
Don't Spit Placard	1,000
Residence Sewage Disposal	2,000

The restricted printing fund, which has handicapped our work so badly during the past six or eight months, has made it impossible for us to keep up our stock of special pamphlets. Many of them are now out of stock. With our depleted stock of literature and with continued requests for pamphlets on various diseases, we have been placed in an embarrassing position, which would have been even more embarrassing had it not been for the Metropolitan Life Insurance Company and for Colgate & Co., who have supplied us with a large amount of well gotten up material dealing with the important subjects on which our stock of literature had been exhausted. We wish to make grateful acknowledgment to the Metropolitan Life Insurance Company and to Colgate & Co., for their help under the circumstances.

In conclusion, it is perfectly clear: *first*, that the State Board of Health, to improve longevity and efficiency in this State, must have the coöperation of the people; *second*, that to get the coöperation of the people, it must be heard by the people; *third*, that it can be heard by the people through two means, (1) the living voice and (2) the mail route. Any one who will stop to count the cost of reaching 2,300,000 people by lectures and the cost of reaching them by attractively prepared literature will recognize the fact that the

State Board of Health must be allowed sufficient printing privileges to furnish the people of this State (*a*) the health literature that they are asking for, and (*b*) health literature that will create a still greater desire on the part of the people to learn how to take care of themselves, how to live longer and be more efficient and happy.

BUREAU OF VITAL STATISTICS

Routine Work.—The following tabular estimate for the year 1916, based upon eleven monthly reports, shows the routine work of this bureau:

Letters received	14,652
Postals received	1,644
Undertakers' reports received	5,064
Supplemental reports received	2,686
Acceptance papers received	120
Deputy blanks received	48
Violation blanks received	336
Provisional certificates received	*12
Permits received (burial and transit)	324
Packages supplies sent out	5,088
Commissions sent out	132
Acceptance papers sent out	72
Postals sent out	1,572
Individual letters written, 21,912; circular-letters, 8,340; total	30,252
Days out of office on official business	108
Hotel inspections made	*14
Certificates received: Births (exclusive stillborn)	76,704
Deaths (exclusive stillborn)	31,776
Stillborn	7,104
Total number certificates received	115,584
Death rate for year	13.4
Birth rate for year	32.2
Index cards made for birth certificates (1915)	24,781
Index cards made for death certificates (1915 and 1916)	24,284
Index cards furnished (decedents from tuberculosis)	1,524
Convictions secured	*36
Fines imposed	$115.92
Miscellaneous tables made up	24

The figures of this table indicate in but a vague way what it means (1) to receive 115,584 death and birth certificates a year, about 20 per cent of which are incorrectly made out and have to be returned for corrections; (2) to carefully index these certificates so that on request of any citizen of North Carolina the birth and death certificate of any person may be turned to within two or three minutes, copied, and sent to the interested party; (3) to classify the birth and death certificates according to counties and townships and cities, and according to diseases, races, and ages, so that any information asked for regarding vital conditions in North Carolina may be immediately available. The amount of clerical work in a bureau of vital statistics is so large, and necessarily has to be so accurate and systematic, that no one can appreciate what it means without actually spending five or ten minutes in the bureau observing the details of the work. The work of this bureau has been subjected to very thorough tests by the United States Government. Its methods have been fully approved; and the completeness of the registration of births and deaths in North Carolina has been found sufficiently accurate to admit North Carolina, in June, 1916, as one of the Registration States of the Union. This means that the Government approves our records and that the rest of the world will recognize them as correct. Our vital statistics records, moreover, prove North Carolina to have an enviable health record. There are many sanitary and legal values of official records of births and deaths which it will not be necessary to detail here.

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*Total for eleven months.

Important Statistical Facts About North Carolina

The following table shows the State birth rate and death rate:

Birth rate (exclusive of stillbirths) for North Carolina, 1915:	
Total rate	31.7
White (estimated)	31.1
Colored (estimated)	28.7
Death rate (exclusive of stillbirths) for North Carolina, 1915:	
Total rate	13.2
White	11.5
Colored	16.9

The most interesting thing about this table is the difference between the white and colored death rates and birth rates. Not only is the white death rate 5.4 deaths less per thousand than the colored death rate, but the white birth rate exceeds the colored birth rate by 2.4 births per thousand population. The difference between the white birth rate and the white death rate shows a gain of 19.6 per thousand white population a year, while the difference between the colored birth rate and the colored death rate shows a gain of only 11.8 per thousand colored population a year. These figures are very significant, showing that the proportion between the two races is growing greater in favor of the white race.

These facts are interesting at this time because it has been only within the last two or three years that southern States have been collecting reliable vital statistics, and with all that has been written on the race question, the biggest southern problem, the facts bearing upon so fundamental a phase of the subject as the proportionate increase and decrease of the races have been unknown.

The following table is taken from the last mortality statistics report of the United States Bureau of the Census, and it shows the death rates of those States whose collection of vital statistics is accurate enough to receive the approval of the United States Government:

DEATH RATES OF THE REGISTRATION STATES—1914.

State	Death Rate Per 1,000 Population
California	13.6
Colorado	11.2
Connecticut	15.1
Indiana	12.9
Kansas	9.8
Kentucky	12.9
Maine	15.6
Maryland	15.9
Massachusetts	14.7
Michigan	13.4
Minnesota	10.6
Missouri	12.3
Montana	11.2
New Hampshire	16.3
New Jersey	14.2
New York	14.7
North Carolina	19.0
Ohio	13.0
Pennsylvania	13.9
Rhode Island	14.7
Utah	10.1
Vermont	15.0
Virginia	14.0
Washington	8.1
Wisconsin	11.1

North Carolina's death rate for 1915 of 13.2 may be compared with the death rates of the above States. The younger western States, like California, Colorado, Kansas, Minnesota, Missouri, Montana, Utah, Washington, and Wisconsin, have death rates somewhat lower than the death rate of North Carolina. This difference is due largely to differences in the average age of the populations of the older eastern States and the younger western States. The new western States have a relatively large middle-age population, resulting from the large emigration which is contributory to their increasing population. The number of people over 60 or even over 50 in the younger western States is much less per thousand population than in the older eastern States; and, again, the birth rate in the younger western States is much less than the birth rate in the older eastern States. This means that the two extremes of life, a large infant population and a large old-age population, both extremely susceptible to morbid influences and contributory to high death rates, are absent in the West and are present in the East. It is, therefore, unfair to place too much importance upon the difference in the death rate of North Carolina and the younger western States. By comparing the death rate of

North Carolina with the older eastern States appearing in the above column, the real significance of our low death rate may be appreciated.

The following table was compiled to show the influence of race distribution on birth and death rates:

BIRTH AND DEATH RATES FOR 1915—BY GROUPS OF COUNTIES.

Estimated Population	Counties	Birth Rates	Death Rates
	UNDER 10% COLORED POPULATION.		
11,927	Alexander	40.7	12.7
7,745	Alleghany	28.6	9.6
19,074	Ashe	37.7	9.9
15,335	Cherokee	35.9	8.4
3,909	Clay	49.6	12.5
4,884	Dare	35.4	11.2
4,964	Graham	35.6	9.2
23,551	Haywood	37.5	10.7
13,602	Jackson	33.4	9.3
12,237	Macon	45.4	11.4
20,132	Madison	22.7	11.4
18,314	Mitchell	39.7	8.0
31,914	Surry	36.9	12.2
11,458	Swain	36.7	7.0
7,492	Transylvania	38.0	14.9
13,630	Watauga	39.7	8.0
32,080	Wilkes	40.4	11.4
16,137	Yadkin	33.5	11.4
12,392	Yancey	48.4	8.6
	Average	37.6	10.4
	OVER 10% AND UNDER 20% COLORED POPULATION.		
52,705	Buncombe	33.5	15.8
23,363	Burke	29.4	14.7
23,154	Caldwell	39.7	8.2
14,813	Carteret	32.3	10.8
30,969	Catawba	34.1	10.2
31,823	Cleveland	35.7	10.2
32,569	Davidson	32.1	12.8
14,067	Davie	30.1	12.4
17,399	Henderson	35.1	13.0
17,992	Lincoln	38.3	10.8
14,049	McDowell	58.6	12.5
7,974	Polk	34.6	12.7
30,154	Randolph	33.1	16.3
30,115	Rutherford	29.1	9.9
22,382	Stanly	36.1	10.7
20,302	Stokes	37.3	9.7
	Average	35.5	11.9

BIRTH AND DEATH RATES FOR 1915—*Continued.*

Estimated Population	Counties	Birth Rates	Death Rates
	OVER 20% AND UNDER 30% COLORED POPULATION.		
30,318	Alamance	25.9	11.3
28,236	Cabarrus	35.1	15.0
53,666	Forsyth	31.6	16.5
41,893	Gaston	32.5	11.7
71,795	Guilford	28.4	13.1
25,436	Harnett	33.9	10.7
37,084	Iredell	31.8	11.9
46,226	Johnston	37.6	11.3
15,374	Montgomery	34.4	10.7
15,277	Onslow	29.1	10.6
38,172	Rockingham	32.5	12.1
40,924	Rowan	30.8	13.0
36,505	Union	31.6	9.2
	Average	31.9	12.0
	OVER 30% AND UNDER 40% COLORED POPULATION.		
15,368	Brunswick	34.5	9.5
23.452	Chatham	30.7	11.2
31,578	Columbus	36.4	12.5
8,307	Currituck	32.0	15.4
27,043	Duplin	29.1	11.0
40,045	Durham	24.7	15.7
11,787	Lee	33.9	14.5
5,728	Camden	18.8	14.1
73,235	Mecklenburg	26.4	14.5
17,624	Moore	28.2	10.3
15,262	Orange	31.3	13.5
10,978	Pamlico	31.6	9.4
31,882	Sampson	38.1	15.3
5,345	Tyrrell	41.3	14.5
67,767	Wake	32.4	17.1
	Average	31.2	13.2

BIRTH AND DEATH RATES FOR 1915—*Continued.*

Estimated Population	Counties	Birth Rates	Death Rates
	OVER 40% AND UNDER 50% COLORED POPULATION.		
33,237	Beaufort	35.4	14.9
38,467	Cumberland	33.0	12.2
24,692	Franklin	35.5	13.8
10,477	Gates	39.8	11.8
26,072	Granville	26.7	13.0
13,634	Greene	43.5	13.9
8,840	Hyde	31.4	13.3
8,982	Jones	36.2	10.5
24,947	Lenoir	30.1	14.3
18,179	Bladen	41.3	14.5
38,077	Nash	30.1	10.0
35,335	New Hanover	32.5	20.4
18,293	Pasquotank	31.8	15.7
16,573	Pender	31.3	12.1
17,710	Person	36.9	12.3
39,216	Pitt	38.7	12.5
21,686	Richmond	29.4	14.2
20,870	Vance	32.8	15.6
11,303	Washington	38.4	14.5
37,988	Wayne	33.6	19.3
30,734	Wilson	37.3	17.4
	Average	34.5	14.1
	OVER 50% AND UNDER 60% COLORED POPULATION.		
27,363	Anson	36.7	10.8
24,358	Bertie	33.4	13.0
14,858	Caswell	33.3	13.1
11,854	Chowan	34.9	15.7
26,350	Craven	27.7	18.0
16,038	Hertford	29.9	13.4
19,069	Martin	41.9	15.8
22,942	Northampton	30.5	13.0
11,561	Perquimans	31.4	14.9
58,050	Robeson	33.0	12.2
16,843	Scotland	37.8	14.5
	Average	33.6	14.0
	OVER 60% AND UNDER 70% COLORED POPULATION.		
34,868	Edgecombe	32.6	18.4
41,262	Halifax	32.0	15.3
20,855	Warren	41.8	14.0
	Average	35.4	15.9

The first interesting fact that this table shows is that the death rate increases as the proportion of the colored population increases, and *vice versa.* The second thing that the table shows is that the birth rate does not bear such a relation to race distribution as does the death rate. As brought out above, the white birth rate slightly exceeds the colored birth rate. The high birth rates of the State are in the western mountain counties. Note, for example: Alexander 40.7, Ashe 37.7, Avery 39.7, Caldwell 39.7, Cherokee 35.9, Clay 49.6, Graham 35.6, Haywood 37.5, Macon 45.4, McDowell 58.6, Mitchell 39.7, Polk 34.6, Stokes 37.3, Surry 36.9, Swain 36.7, Transylvania 38.0, Watauga 39.7, Wilkes 40.4, and Yancey 48.4.

The following table shows the birth rate and death rate by counties for the year 1915:

TABLE SHOWING NUMBER OF BIRTHS AND DEATHS IN EACH COUNTY, TOGETHER WITH THE RATIO PER THOUSAND POPULATION, FOR YEAR 1915.

Counties	*Births	Ratio Per 1,000	Deaths Exclusive of Stillbirths	Rate Per 1,000
Totals	*79,409	33.4	31,324	13.2
Alamance	787	25.9	345	11.3
Alexander	486	40.7	152	12.7
Alleghany	222	28.6	75	9.6
Anson	1,005	36.7	298	10.8
Ashe	720	37.7	190	9.9
Avery	432	39.7	104	8.0
Beaufort	1,179	35.4	498	14.9
Bertie	814	33.4	305	13.0
Bladen	752	41.3	264	14.5
Brunswick	531	34.5	147	9.5
Buncombe	1,502	33.5	836	15.8
Burke	687	29.4	344	14.7
Cabarrus	993	35.1	424	15.0
Caldwell	835	39.7	219	8.2
Camden	108	18.8	81	14.1
Carteret	479	32.3	161	10.8
Caswell	495	33.3	196	13.1
Catawba	1,058	34.1	317	10.2
Chatham	721	30.7	265	11.2
Cherokee	552	35.9	130	8.4
Chowan	414	34.9	187	15.7
Clay	194	49.6	49	12.5
Cleveland	1,138	35.7	327	10.2
Columbus	1,152	36.4	396	12.5
Craven	730	27.7	475	18.0
Cumberland	1,155	33.0	509	12.2
Currituck	266	32.0	128	15.4
Dare	173	35.4	55	11.2
Davidson	1,147	32.1	418	12.8
Davie	424	30.1	175	12.4
Duplin	789	29.1	300	11.0
Durham	991	24.7	630	15.7
Edgecombe	1,137	32.6	645	18.4
Forsyth	1,699	31.6	887	16.5
Franklin	878	35.5	343	13.8
Gaston	1,362	32.5	492	11.7
Gates	418	39.8	124	11.8
Graham	177	35.6	42	9.2
Granville	697	26.7	341	13.0
Greene	594	43.5	190	13.9
Guilford	2,040	28.4	945	13.1
Halifax	1,322	32.0	632	15.3
Harnett	863	33.9	273	10.7
Haywood	884	37.5	252	10.7

TABLE SHOWING NUMBER BIRTHS AND DEATHS IN EACH COUNTY, TOGETHER WITH THE RATIO PER THOUSAND POPULATION, FOR YEAR 1915—*Continued.*

Counties	*Births	Ratio Per 1,000	Deaths Exclusive of Stillbirths	Ratio Per 1,000
Henderson	611	35.1	237	13.0
Hertford	481	29.9	216	13.4
Hoke	384	33.0	140	12.2
Hyde	278	31.4	118	13.3
Iredell	1,180	31.8	445	11.9
Jackson	455	33.4	127	9.3
Johnston	1,739	37.6	523	11.3
Jones	293	36.2	95	10.5
Lee	400	33.9	172	14.5
Lenoir	751	30.1	359	14.3
Lincoln	690	38.3	195	10.8
Macon	556	45.4	140	11.4
Madison	459	22.7	227	11.4
Martin	800	41.9	303	15.8
McDowell	824	58.6	177	12.5
Mecklenburg	1,940	26.4	1,067	14.5
Mitchell	421	39.7	109	8.0
Montgomery	529	34.4	166	10.7
Moore	498	28.2	182	10.3
Nash	1,147	30.1	382	10.0
New Hanover	1,151	32.5	723	20.4
Northampton	700	30.5	300	13.0
Onslow	445	29.1	162	10.6
Orange	478	31.3	217	13.5
Pamlico	347	31.6	104	9.4
Pasquotank	583	31.8	288	15.7
Pender	520	31.3	201	12.1
Perquimans	364	31.4	173	14.9
Person	654	36.9	219	12.3
Pitt	1,521	38.7	493	12.5
Polk	276	34.6	102	12.7
Randolph	999	33.1	354	16.3
Richmond	638	29.4	308	14.2
Robeson	1,655	33.0	678	12.2
Rockingham	1,241	32.5	463	12.1
Rowan	1,264	30.8	536	13.0
Rutherford	879	29.1	300	9.9
Sampson	1,217	38.1	488	15.3
Scotland	638	37.8	245	14.5
Stanly	808	36.1	240	10.7
Stokes	758	37.3	197	9.7
Surry	1,179	36.9	390	12.2
Swain	421	36.7	81	7.0
Transylvania	285	38.0	112	14.9
Tyrrell	221	41.3	78	14.5
Union	1,155	31.6	338	9.2
Vance	686	32.8	327	15.6
Wake	2,202	32.4	1,162	17.1
Warren	872	41.8	294	14.0
Washington	435	38.4	164	14.5
Watauga	504	39.7	113	8.0
Wayne	1,288	33.6	734	19.3
Wilkes	1,298	40.4	367	11.4
Wilson	1,148	37.3	536	17.4
Yadkin	541	33.5	184	11.4
Yancey	600	48.4	107	8.6

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*Stillbirths included.

STATE SANATORIUM AND BUREAU OF TUBERCULOSIS

Routine Work.—The following tabular estimate for the last twelve months, based upon eleven monthly reports, shows the work of the Sanatorium and the Bureau of Tuberculosis for the past year:

Letters and postals received			17,023
Letters written:	Individual	14,364	
	Multigraph	51,828	
	Total number		66,192
Articles written (approx. No. words):	Newspaper	69,564	
	Bulletin	1,692	
	Official pamphlets	8,616	
	Other publications	4,356	
	Total number		84,228
Forms and placards prepared			37
Blank books mailed for reporting cases			17,064
Number cases registered:	White	2,412	
	Black	1,452	
	Total number		3,864
Literature sent to registered cases			3,204
Other literature sent out			9,972
Sputum cups distributed			65,784
Tuberculin sent physicians for Von Pirquet diagnostic tests			1,764
Blanks for reporting result of Von Pirquet diagnostic tests			1,764
Patients' histories written (approximate number words)			135,156
Envelopes addressed			52,224
Addresses delivered:	Number		38
	Total audience		4,356
Local activities:	Local investigations		1
	Conferences with local authorities		63
Days out of office on official business			84
Patients admitted:	Incipient	96	
	Moderately advanced	156	
	Far advanced	72	
	Miscellaneous	9	
	Total number		333
Patients discharged:	Arrested	33	
	Apparently arrested	48	
	Quiescent	66	
	Improved	96	
	Unimproved	24	
	Died	8	
	Total number		275
Outside patients examined			432
Sputum examinations			1,416
Urinalyses:	Chemical		744
	Miscellaneous		396
Blood examinations			144
Gastric analyses			6
Examination feces			6
Other examinations			3

Special Work.—The Sanatorium and the Bureau of Tuberculosis has been operated during the last biennial period on the following revenue:

For permanent improvements	$60,000.00*
For maintenance	50,000.00
For extension work	20,000.00
Fees from patients	67,020.37

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*Out of this amount $19,000 had to be paid out on old debts of the institution contracted before the Sanatorium was turned over to the State Board of Health.

The patients or their friends, or the organizations sending the patients to the Sanatorium, pay $1 per day to the Sanatorium, which covers all the expenses of the patient while in the institution. The actual cost of treating the patients for the last two years has been $1.50 *per capita per diem.* Of this amount, the patient has paid 87 cents and the State 63 cents.

During the past two years 454 patients have been admitted. Of these, 102 were incipient cases, 216 were moderately advanced, and 136 far advanced.

During the last two years 263 patients who have stayed ninety days or more in the institution have been discharged. Of these, 41 were arrested, 68 apparently arrested, 82 quiescent, 40 improved, 25 unimproved, and 7 died.

The following is an abstract from the biennial report of the Sanatorium and Bureau of Tuberculosis during the last two years:

"*Building Activities.*—We have constructed the left wing of our main building, which is to be the receiving building, administration building and infirmary. This left wing was intended to accommodate 48 patients. We are now housing 64 patients in this building. We have built a power house, installed a 100 h.p. boiler, engine, and dynamo. From this power house we heat all the buildings on the hill, furnish steam to run ice plant, heat for cooking, and electricity for light and power. We have installed an ice plant and cold storage. We have built a coal chute which delivers the coal in front of the power house door, have built a house for engineer, and a two-room house for fireman, a storage warehouse in which to store supplies, close by the railroad where it is convenient to unload freight and express direct into the warehouse. We have painted, screened, underpinned, and otherwise repaired all the old buildings on the hill, making extensive repairs to the dining-room and kitchen. In matters of economy, we are running our power plant for about what it cost us to pump our water with gasoline and buy our ice; so that we have our electric lights and steam heat free.

"*Extension Department.*—In the Extension Department we have in two years examined 643 cases for diagnosis, 411 during 1916. We have carried on extensively a correspondence course with physicians throughout the State, especially with regard to the early diagnosis of tuberculosis. This has been productive of great good. We have endeavored to enforce the law requiring the physicians to report their cases of tuberculosis to us, and have sent such patients printed instructions in regard to the prevention of the spread of the disease to others, and as to open-air treatment. We have bought sputum cups in quarter-million lots and are shipping them by parcels post to any one wanting them, at actual cost—50 cents per 100. We have distributed 60,302 of these during the last year. We have sent out 12,093 copies of literature. We have had 3,557 cases reported. Of these, 2,545 are alive. The others have died. Of the 2,545, 1,776 are white, 769 are colored. We have written letters, multigraph and personal, to the number of 60,744. We have received 14,605 letters. We have written articles for the press, *Bulletin*, and other magazines, amounting to 80,273 words. We have prepared 37 forms, placards, etc., amounting to 19,241 copies. We have been furnishing capillary tubes of tuberculin for the Von Pirquet diagnostic test to physicians, and have sent out 1,625 of these, the only charge being that they should report the result of the test. We have delivered during the last year 35 addresses, to a total audience of 3,995. We have had 58 conferences with local authorities. We have done 2,350 laboratory examinations in the last year and furnished physicians with histories of the first examination of their patients amounting to 133,787 words. We made a complete detailed sickness survey of the silk mill village at Wadesboro, perhaps more complete than has ever been done in the United States, and among other things, advised the employment of a public health nurse, which has been done.

"*Public Health Nursing*—After a conference with the Secretary of the State Board of Health, and at his suggestion, we took the matter of Public Health

Nursing under the Bureau of Tuberculosis. We had all the public health nurses in the State, about 35 in number, as our guests at the Sanatorium for a few days, and the meeting did much to further the cause of public health nursing. We have secured a Director of Public Health Nursing for North Carolina, Miss S. H. Cabanis, who devotes all her time to this particular thing. We are fortunate to secure the coöperation of the Metropolitan Life Insurance Company, who is paying one-half of the salary and traveling expenses of Miss Cabanis. This company is also coöperating in local nursing activities, and has given to us five scholarships in public health nursing in the University of Cincinnati.

"*Red Cross Seals*—We have conducted the Red Cross Seal Campaign for two years, and are actively engaged in the third campaign at this writing. The receipts last year amounted to $8,033.86. We confidently expect the receipts this year to go over $10,000. Seventy-five per cent of the receipts will be used by the local committees in their own localities; 10 per cent will be sent to the National Association for the Study and Prevention of Tuberculosis, who furnish the seals and advertising matter, and 15 per cent will go to the State Red Cross Seal Commission. All of it will be used in the fight against tuberculosis in North Carolina. In connection with the Red Cross Seal Campaign we have each year sent out printed matter and letters to every minister in the State, requesting him to address his congregation on the subject of the prevention of tuberculosis on Tuberculosis Sunday."

BUREAU OF RURAL SANITATION

Routine Work.—The following tabular estimate for the last twelve months, based upon eleven monthly reports, shows the work of the Bureau of Rural Sanitation for the last twelve months:

Letters received			3,092
Letters written:	Individual	1,416	
	Multigraph	7,258	
	Total number		8,674
Articles written, 14; approximate number words			9,330
Forms and placards prepared			23
Pieces of literature sent out			92,341
Lectures or addresses delivered:	Total number		309
	Illustrated		102
	Total attendance		48,891
	Average attendance		158
Inspections:	Hotels		3
	Schools (medical)		173
	Children examined		12,550
	Children found defective		5,664
	Children card indexed		5,524
Typhoid dispensaries:	Total number held		647
	Estimated attendance		61,561
	Number people taking complete treatment		48,051
Number days spent out of office on official business			102
Number units health work adopted			12
Total money received from counties			$ 4,581

Special Work.—(1) In the nineteen months of its existence the Bureau of Rural Sanitation has given three complete vaccinations to 100,000 people, distributed among 21 counties, vaccinating an average of 4,761 persons in each county, which is from 16 to 20 per cent of the population of the counties. (2) This bureau has inspected 206 schools, examined 15,751 children, found 7,390 physically defective, and has been instrumental in having 10 per cent treated. Along with this inspection of schools, 241 public health lectures were given in the schoolhouses, 125 of which were illustrated, to a total audience of 40,000 people. This school work has been confined to 6 counties and 5 towns.

SOIL POLLUTION WORK

This work has only recently started in North Carolina, and the following is a report of the first three months of the work from the Medical Director, Dr. B. E. Washburn:

Preliminary Report of the Wilson County Public Health Campaign, from September 1 to December 1, 1916

The Wilson County Public Health Campaign is being conducted under the direction of the State Board of Health and has for its object the control of diseases spread through pollution of the soil. The method of work is to visit each and every home in the county and demonstrate to the people the ways in which this class of diseases is spread and to interest them in providing sanitary privies as a preventive measure. Also, an important part of the campaign is to examine and give treatments for hookworm disease and vaccinations to prevent typhoid fever. From September 1 to November 15 the staff consisted of three field workers; on the latter date the work was enlarged, and the staff now consists of a medical director, an office assistant, a microscopist, and six field workers. The central office is in the town of Wilson, and it is here that the clerical and microscopical work is done.

The active campaign began on September 11, 1916, and at present field work is being conducted in 5 of the 10 townships of the county, namely, Old Fields, Spring Hill, Cross Roads, Black Creek, and Stantonsburg. The campaign has just become well organized, and, since many patients are still under treatment and the building of sanitary privies is still under way in all of the above townships, it is impossible before the completion of the work in any given township to record all of the results which have been accomplished in the district. The following table, however, shows the work that had been accomplised up to December 1:

Number of homes visited	965	
Number of homes coöperating	772	or 80.3%
Number of people examined for hookworms	3,801	
Number found infected	598	or 19.4%
Number treated	333	
Number cured to date	50	
Number refused to take treatment	7	
Number immunized against typhoid fever	119	
Number of homes having completed sanitary privies	119	or 12.1%
Number of schools provided with sanitary privies.	4	

The educational work, in addition to the home visits, was conducted through the medium of public lectures and school demonstrations; 25 lectures, illustrated with magic-lantern slides or moving pictures, have been given, and lectures and microscopic demonstrations have been made at 7 schools. The aggregate attendance at these 32 meetings is estimated to have been at least 2,500.

Special mention should be made of the sanitary work done by the citizens of the villages of Stantonsburg and Lucama. On December 1, 65 of the 80 homes in Stantonsburg had been provided with sanitary privies and at Lucama 41 of the 58 homes were so provided. Prior to the campaign none of the homes in either village had sanitary privies.

Special Work—Assistance was given to three Better Babies Contests, all of which created much interest in the communities in which they were held.

BUREAU OF ACCOUNTING

The following table shows the actual work, exclusive of the double-entry bookkeeping, of the Bureau of Accounting for eleven months:

Number of letters received	672
Number of letters written	1,200
Number of bills sent	1,692
Number of receipts issued	610
Number of checks issued	3,444
Amount collected on Laboratory accounts	$9,550.80
Amount due Laboratory January 1, 1916	4,430.00
Amount due Laboratory November 30, 1916	2,795.00

THE PUBLIC HEALTH NEEDS

RECOMMENDATIONS OF THE NORTH CAROLINA STATE BOARD OF HEALTH TO THE GENERAL ASSEMBLY OF 1917

At this time the three most important needs of the State in public health legislation, and to the serious consideration of which we respectfully invite the attention of the General Assembly are:

1. A State law for the control of the occurrence and spread of contagious or epidemic diseases that will be uniform and efficient throughout the State.
2. A State law regulating the conditions of sales of trade-mark remedies and alleged remedies of secret composition.
3. Adequate provision to encourage the development of county health work in the direction of economy and efficiency.

STATE CONTROL OF CONTAGION

The control of the occurrence and spread of epidemic and contagious diseases is a State and not a county or local responsibility. To this fundamental principle of sanitary government the United States Public Health Service, the American Public Health Association, the International Health Board, the American Medical Association, and every progressive State board of health or department in the Union will subscribe. Even slight consideration of the nature of the problem will convince any one of the soundness of this conception of it. The State should recognize its responsibility for the control of contagious and epidemic diseases for the following reasons:

Reason 1.—The local governments, counties and small municipalities, are helpless to protect themselves from the *introduction* of epidemic or contagious infection. To illustrate: We will assume that in the seven counties—Harnett, Johnston, Nash, Franklin, Granville, Durham, and Chatham—which touch the 90-mile boundary of Wake, there exists well conceived rules and regulations for the control of epidemics, and that back of these rules and regulations there is an intelligent and interested health officer who is not afraid of doing his duty. We will assume that Wake County is very lax in the control of epidemic diseases. Under these conditions an epidemic of scarlet fever, diphtheria, whooping cough, measles, infantile paralysis, or other contagious disease, starting in Wake, would spread into the seven neighboring counties, which, without State intervention, would be practically helpless to prevent the introduction of the infection among their people. We will reverse the situation: We will suppose that Wake, so far as her internal machinery is concerned, is adequately protected, but that one or all seven of her neighbors are careless; then Wake is helpless to prevent the introduction of infection from one or all of the seven neighbors. The routes of infection recognize no county boundaries, and if one county or one community is to be protected from infection from neighboring or even distant counties and communities, the State *alone* can give it the protection that it needs.

Reason 2.—If an epidemic or contagious disease *has been introduced* into a county, local measures and agencies of control are weak as compared with State measures and State agencies of control.

(a) **MEASURES:** In the absence of State rules and regulations for the control of a local outbreak of an epidemic or contagious disease, the local board of health (composed of the chairman of the board of county commissioners, the county superintendent of schools, the mayor of the county town, and two local physicians selected by the three county officials), acting with or without the advice of the county physician, pass, or do not pass, rules and regulations for the control of infectious and contagious diseases. Now, as a matter of fact, in 75 per cent of the counties of the State there are *no* rules and regulations for the control of epidemic and contagious diseases. The rules and regulations governing the control of contagious and infectious diseases are in their nature technical. These rules are subject to important revisions at any time for adjustment to scientific discoveries and new methods of control, and such rules and regulations should be thoroughly considered, in the light of our present knowledge and the epidemiological practice in other States, by experts who can give practically their entire time to this subject. This being true, the county board of health (composed of laymen with many other interests and assisted by a county physician giving but a small part of his time to this service) is not qualified to enact such local ordinances.

(*b*) **AGENCIES:** The local agent for the enforcement of rules and regulations governing contagion is the county physician. If he prosecutes his fellow physicians for not reporting cases, personal motives are attributed to him, and his loss in his professional standing under misguided public opinion does not compensate him for the small salary he receives as quarantine officer. He, therefore, does not enforce the law. Every one is familiar with the indifference of the public towards quarantine measures; every one knows that where quarantine rules and regulations exist—and even the existence of rules is exceptional—they are violated freely; furthermore, an examination of the court records of this State, in our opinion, will show less than ten or twelve prosecutions a year for infringements of the quarantine laws.

Reason 3.—All of the above defects incident to county control of epidemics and contagions are removed completely or partially by the State's assuming this respnsibility. The State can warn and protect counties against other counties. The State Board of Health, with the assistance of a technical staff, is many times more able to pass proper rules and regulations governing local quarantine than the local lay boards of health. The force of a State law, with a State agency for its enforcement back of it, would have far greater respect than a local ordinance and would be enforced and recognized, whereas the local ordinance is neither enforced nor even regarded by the majority of the people.

METHOD OF CONTROL

A proper system of State control of contagious and epidemic diseases would include the following:

1. Accurate and prompt reporting.
2. A proper system of recording at the central office, showing the geographical distribution of contagious disease throughout the State at all times, and also showing the number of cases of such disease as compared with the expected incidence of every contagious disease.
3. Preliminary notices to threatened counties and localities and the inauguration of anticipatory measures when the geographical chart shows the spread of the contagion toward certain counties and localities.

4. The adoption by the State Board of Health, with the assistance of an expert epidemiologist, of an effective and conservative and economic system of technical rules for the control of contagion that will have the approval of public opinion.

5. A State officer, that is, a State epidemiologist, with sufficient means to see that the State rules and regulations are enforced in all counties.

Reporting.—The physicians and the nurses of the State would be required to report promptly, within twenty-four hours, all cases of contagious or infectious diseases which they have diagnosed or have good reasons to suspect. The same requirement would apply to parents and householders where there was a case of a contagious disease with no physician in attendance. The physicians of the State would be supplied with a proper form of postal card upon which to make the report. This report would be made to a county quarantine officer selected by the county board of health, but under the control and direction, so far as his quarantine duties are concerned, of the State Board of Health. This county official would send in to the State official every day the reports of all contagious and infectious diseases received by him.

Recording.—The reports received in the State office would be recorded in the following way: A very large wall map would be kept, and the contagious diseases reported indicated on the map by special colored tacks and spots. Every colored tack in the map would indicate the location of an existing case of one of these diseases. Every colored spot would indicate where a case of the disease had occurred during the year, but had, at some previous time, been released from quarantine. The color of the tacks and spots would be the same for the same disease; that is to say, if yellow represented scarlet fever, a yellow tack in the map would indicate the location of an existing case of scarlet fever, and a yellow spot would indicate where a case of scarlet fever *had* existed, and so on with red tacks and red spots representing measles, blue tacks and blue spots representing diphtheria, green tacks and green spots typhoid fever, purple tacks and purple spots whooping-cough, etc. This system of keeping the geographical distribution of disease is most important. It enables the State Government to know where a certain epidemic started and in which direction or directions it is traveling, and thereby enables it to notify and put on guard those counties and communities towards which the disease is making its way.

In addition to the geographic record of epidemic distribution, another record, the chronological record, would be kept in the central office. A chronological disease chart consists of 365 vertical spaces, properly numbered and subdivided according to the twelve months of the year. Across the vertical space are drawn a number of lines converting the chart into squares. On this checkered background the number of cases and the number of deaths of any given disease, based upon the average occurrence of such disease through the country, is platted in solid lines. The cases of disease then reported, that is, the *actual* occurrence of the disease, is recorded on the chart by drawing a vertical line in one of the horizontal spaces and in that vertical space corresponding with the month and day of the month on which the disease occurred. This chart will show on any day in the year just what contagious disease is occurring in North Carolina in fewer cases than the expectancy, and the reverse. The central officer, then, and the local officers in the various counties, through the chronological chart, serving as a disease barometer, are kept constantly posted, not only as to *where* greater action is needed for the suppression of contagious diseases, but also as to *what disease* is demanding greater effort.

Anticipatory Measures.—During the present year scarlet fever has been coming down the Southern Railway from the western part of the State. Could we have had a State system of reporting and recording, we could have known when and where this epidemic began; we could have prepared communities and counties towards which the disease was making its way; and, by anticipation, could have prevented many cases. In other words, we could have burned a fire zone around the spreading epidemic. These anticipatory measures would include notification of the medical profession, putting them on their guard for early cases, notification of schools, work through newspapers, etc.

Proper Rules and Regulations.—The State, with an expert staff of health officers, is as much better prepared to pass the necessary technical rules and regulations for the control of contagious and epidemic diseases as the State, with its Laboratory of Hygiene, is better prepared to do this technical highly scientific work than the counties are prepared to do it.

Rigid Enforcement of Quarantine Laws.—Quarantine regulations in North Carolina at present are so little regarded generally that their principal effect is to create a disrespect for law in general, and quarantine laws in particular, rather than to inhibit the spread of contagion. We do not include in this statement those communities with well organized health departments and whole-time health officers, but, on the other hand, we do include the larger part of the State and about three-fourths of the State's population.

In conclusion, the control of epidemics and contagions is a State responsibility and not a local responsibility. The State should do its duty.

STATE REGULATION OF THE CONDITIONS OF SALES OF TRADE-MARK REMEDIES

There is a large and dangerous class of remedies the claims of which are not vouched for by any scientific or official organization and that represent neither discovery nor invention, that is, that cannot secure patent rights from the United States Government. These remedies are the trade-mark or secret remedies, a group of remedies usually and erroneously referred to as "patent medicines." Trade-mark or secret remedies are nothing more than an ordinary prescription, the ingredients of which are withheld from the public, compounded and sold, through extensive and usually misleading advertising, in enormous quantities.

It is estimated that the drug bill of the United States amounts to $500,000,000 a year. The population of the United States from 1880 to 1910 increased 83.3 per cent, and the sales of manufactured remedies 740.5 per cent. The population less than doubled; the sale of manufactured remedies increased more than eightfold. There are from 40,000 to 50,000 brands of proprietary remedies on the market in this country. Recently in North Carolina, according to the claims of the manufacturer, over $200,000 worth of one secret remedy has been sold. The sales of secret remedies in North Carolina probably amount to over $1,000,000 a year.

It can be shown that, as a class, the manufacturers of secret remedies are probably the most unscrupulous of all commercial classes, and it can be further shown by a report of so high and so unbiased an authority as the British

House of Commons that the secret remedy business is permeated with fraud, and dangerous alike to our physical and economic well-being. The harmful effects of secret remedies may be classified as follows:

EFFECTS OF SECRET REMEDIES

Effect No. 1.—The secret remedy business, through its extensive advertising, influences a large number of people to rely on drugs when they should be influenced to rely upon the adoption and cultivation of proper habits of living. Example: from 20 to 30 per cent of the adult population of this country is constipated and suffers from time to time with what they call "torpid liver," "liver out of fix," "a general no-account feeling." What these people need is to drink plenty of water, including a glass of warm water before breakfast, to take a diet containing a good amount of vegetable matter and fruit, and to cultivate regular habits of going to stool, regular habits of exercise, and, if necessary, special exercises of bending motions, forward and sideways, twisting motions such as compress the abdominal contents and develop the abdominal muscles. The effect of taking purgatives for this condition and neglecting these right habits of living causes the bowels to become more and more dependent on artificial stimulation, so that when the purgative remedy has been taken for some time the patient, although relieved temporarily, is permanently in worse shape than when he began the treatment. Secret remedies, in inculcating habits of disobedience to nature and reliance upon artificial agents, are particularly harmful.

Effect No. 2.—The second harm done by secret medicines and secret appliances may be illustrated by the oxypathor of late renown. As will be remembered by North Carolina people, the oxypathor was nothing more than a tube, filled with some inert substances, and having wires attached to it through which its promoters claimed electric currents passed from the tube to the body of the patient. The people were charged $35 for the oxypathor. This little toy never hurt anybody except by robbing them of $35, and possibly by—

Effect No. 3.—Many people in the incipient stages of tuberculosis, cancer, Bright's disease, and other diseases, are influenced by the manufacturers and venders of secret remedies to believe that by taking one of these remedies their disease will be cured. They buy the remedy, spend from two to six or probably twelve months in trying it out, and then, on finding they have gone from bad to worse, they consult a physician and find out they have tuberculosis, cancer, or some other disease that has passed from an incipient and a curable condition to a well developed and possibly incurable condition. Many lives are lost through this effect of secret remedies.

Effect No. 4.—The Select Committee of the British House of Commons says:

> "There can be no doubt that many persons acquire the drink habit by taking these wines and preparations [remedies containing from 14 to 30 per cent alcohol] either knowing that they are alcoholic, since they can be purchased and consumed without giving rise to the charge of drinking, or in ignorance that they are highly intoxicating liquors."

As an illustration, according to the State Chemist of Michigan, Tanlac consists of a mixture of alcohol of about 17 per cent—that is, about the strength of Sherry wine or three times the strength of beer or one-third the strength of good whiskey—and purgatives. Now, why shouldn't any one taking Tanlac feel better, with the stimulation of its whiskey and the relief from its purgatives which get rid of the accumulated poisons of the bowels? But why shouldn't the users of Tanlac know what they are taking? Of course, the Prohibitionists would object to people taking all the liquor that the advertisements of Tanlac indicate they are taking. The Tanlac allowance beats the legislative allowance of two quarts monthly, all hollow. If (and we have no reason to doubt) the State Chemist of Michigan is correct in his analysis of Tanlac, this up-to-date secret remedy affords us a beautiful example of the typical secret remedy. The manufacturer, knowing the craving of the masses for artificial stimulants, and knowing the large number of people suffering from constipation, have combined alcohol and purgatives in a way to meet the popular demand; whereas there are very few intelligent people that would knowingly take alcohol and purgatives for the relief of either worry or constipation.

Effect No. 5.—Dr. Martin I. Wilbert, of the Division of Pharmacology of the United States Public Health Service, associates the increasing death rate in this country from degenerative diseases, such as chronic Bright's, high blood pressure, apoplexy, diabetes, cirrhosis of the liver, etc., causing the death of over 200,000 persons annually, with the increasing consumption of drugs, as brought out in another section of this article. He raises the interesting question as to whether there is any connection between the increase of more than 100 per cent in the deaths from this class of diseases and the increase of 740 per cent in the consumption of drugs that has taken place during the past thirty years. Dr. Wilbert then goes on to say:

> "When one considers the potential possibilities for harm inherent in practically all drugs and preparations it is astonishing that attention has not earlier been directed to the need for careful, systematic study of the possible untoward influences of the several drugs used.
>
> "The frequent, excessive or long continued use of any one of a number of inorganic compounds, particularly the soluble salts of mercury, lead, uranium, and related metals, has been shown to be irritating to the kidneys and capable of producing chronic lesions. The constant ingestion of many of the otherwise innocuous inorganic salts when contaminated by traces of arsenic or lead may, and undoubtedly will, produce toxic manifestations.
>
> "Many organic compounds have also been found to produce marked changes or secondary manifestations. The changes produced by alcohol and the narcotic drugs have been fairly well recognized, and considerable data are also available regarding the harmful effects of the coal-tar analgesics, the several hypnotics, and a number of aldehydes and related products.
>
> "All of the important or active medicaments must of necessity have harmful influences when taken indiscriminately or for a continued length of time. It has been very properly asserted that the activity of drugs may vary to an infinite number of degrees. It may be accepted as fact that whenever the activity is sufficient to produce a decided therapeutic effect in disease it is also sufficient to produce a deleterious effect when improperly used, either as to time or quantity. In other words, useful drugs are of necessity poisonous substances which tend to derange normal processes of the human organism, and many of them must of necessity be extremely injurious to the various organs of the body if used at all liberally for any appreciable length of time.
>
> "Quinine, for instance, the alkaloid of cinchona bark, is still used in rather large quantities, and as such or in the form of bark was imported into the United States, in 1913, to the total of 2,065,000,000 average doses, enough to give every man, woman, and child from 25 to 30 doses each year. This

drug has long been known to produce a characteristic form of intoxication accompanied by roaring in the ears, impairment of hearing, dizziness, headache, and nausea. Gastro-intestinal disturbances are also observed at times, and the ingestion of even small doses for a considerable period may be followed by gastric catarrh and its sequelæ. The administration of larger doses has been followed by marked and at times persistent deafness, and even blindness.

"The habitual ingestion of coal-tar analgesics, which form para-aminophenol, is followed by a train of symptoms including destructive changes in the blood, the production of methemoglobin, a degeneration of the heart muscle, cardiac failure, cyanosis, abnormally low temperature, and collapse.

"The salicylates have many of the properties of coal-tar analgesics and are used quite extensively as sedatives for the relief of headache and neuralgic pains. They are known to have a deleterious influence on the digestive function, and in larger doses or when long continued are frequently accompanied by symptoms of cinchonism similar to those produced by quinine. The salicylates may also have a depressing influence on the central nervous system accompanied by convulsions, slowing of respiration, and collapse from circulatory depression.

"Pontius (J. Am. M. Assoc., v. 62, p. 797) reports seeing a nervous woman, age 45, who on the advice of a friend had for the past year taken 5-grain tablets (1 per dose) from 3 to 10 times daily for neuralgic pains. Her mental condition when seen by the physician was similar to that of one addicted to the morphine habit.

"The coal-tar hypnotics like sulphonal and trional may cause acute symptoms of poisoning accompanied by ataxia, nausea, gastric pain, irritation of the kidneys, albuminuria, and nephritis.

"The mental state induced by the long continued use of sulphonal and its congeners in full doses is said to be a badly disturbed one, with derangement and even dementia.

"The occurrence of acute intoxication in patients from the ingestion of various drugs is frequently ascribed to idiosyncrasy. As yet comparatively little is known regarding the principles underlying this occasional manifestation of undue activity, but it is probable that idiosyncrasy, so called, is in reality due to the synergistic action of several compounds taken at the same time or to the combined action of products formed in the human body with a compound taken as medicine.

"In connection with some drugs, the use of which is long continued, the body may develop a tolerance or diminished sensitiveness to their action. This appears to be particularly true of narcotics and of many of the cathartic drugs. These lead to the habitual consumption of drugs, and their use once commenced is fraught with many difficulties. That the use of the so-called laxative drugs is not an entirely negligible factor is well known.

"The amount of money expended annually for drugs and medicines in this country is out of all proportion to the real need or requirements of the people, and to this extent at least the unnecessary use of medicines may be considered an economic waste.

"*Enough has been said to demonstrate that medicines, if at all deserving of the name, must of necessity be harmful when misapplied or when used for any considerable length of time without a due appreciation of their possible secondary influences and the chronic derangements that may follow in their wake.*" [Emphasis ours.]

Explanation of Public Confidence in the Secret Remedy

Explanation No. 1, or the Psychology of Advertising.—No secret remedy can find a sale or exist without advertising. Advertising a secret remedy is absolutely essential to its existence. As the peeled saplings which Jacob placed before the gravid sheep caused a mental impression on the animals sufficient to mark their offspring, so the constant and conspicuous secret remedy advertisements ever before the eyes of the public finally grip the public mind so as to color its thoughts and influence its actions.

Explanation No. 2, or Superstition and Cure.—We are all superstitious. Superstition is not restricted to any class; we find it in both the ignorant and intellectual, differing only in degree; it is our common heredity. From out of our prehistoric past, out of the past of legend and myth, and still further back from the childhood and infancy of the race, we have brought up with us various forms of superstition. We don't want to see the new moon through the trees; we don't like to sit down with thirteen at the table; we hang horseshoes over our doors; we carry buckeyes to keep off rheumatism and to cure piles; and we take the gallstone of the deer, moisten it, and stick it on the fresh bite of rabid animals to prevent hydrophobia. The very wisest men of England at one time shared the belief with the masses that the touch of the king was almost an infallible cure for scrofula. This faith in the mysterious, this inherent trait of human nature, is responsible for much of the confidence of the people in those secret remedies that claim some extraordinary origin.

Explanation No. 3, or the Tendency of People to Confuse Coincidence with Cause and Effect.—Dr. Osler, in going through the wards with medical students, would often point to a typhoid fever patient who had never received a single drop or grain of medicine and who was getting well in the third or fourth week of the disease, and would then remark: "What a great pity that old Dr. X had not had a chance to give that patient his infallible remedy for the cure of typhoid fever. What a fine demonstration that patient would have made of its wonderful effects." Scientific medical literature contains numerous examples of instances like the following: The medical staff of a certain hospital adopts a new treatment for pneumonia. The first twenty-five cases of pneumonia admitted to the hospital make prompt and complete recovery under the new treatment. The younger, less experienced, and more enthusiastic staff of the hospital are anxious to rush into print with the wonderful effects of the new treatment. The older heads say, "No; let's wait until we get a few more cases." Out of the next ten cases admitted, eight die; and no report of what appeared to be a new discovery ever occurs, for the fatality under the new treatment is just what it has been for fifty years under the old treatment—about 25 per cent. A person has pneumonia; a friend drops in on the fifth day and advises the family to apply some Gowan's Pneumonia Cure. The next day the crisis occurs. The patient passes within a few hours from the edge of the grave back to a condition of safety. What a wonderful remedy! But another patient living in another part of the town and with the same identical symptoms did not have any Gowan's Pneumonia Cure applied on the fifth day, and the crisis occurred on the sixth day just as in the case that had an application of Gowan's Pneumonia Cure. The great majority of diseases are cured by Mother Nature. The human body began its fight with the causes of disease and death many years ago, long before either secret or open remedies were discovered or concocted. The cells that make the body are soldiers of long experience in dealing with germs and their allies. In ninety-five recoveries out of a hundred Nature, the fighting cells of the body, turns the trick. Before people are justified in recognizing a remedy as a cure they must be careful to distinguish between occurrences that are merely coincidents and occurrences that stand in the relation of cause and effect.

Explanation No. 4, or Apparent Relief and Real Harm.—Assuming that the State Chemist of Michigan is correct in stating that Tanlac consists of a combination of alcohol and purgatives, this remedy, as we have elsewhere pointed out, furnishes an excellent example of this explanation of public confidence in secret remedies. Tanlac will, no doubt, make any one who takes it feel better, especially if such a person is constipated—and about 25 per cent of the people are constipated. The same effect can be obtained for less money by taking the equivalent amount of whiskey as a stimulant and some of the simple purgatives. The fact that this remedy stimulates and makes a torpid bowel throw off the poisons of the body does not mean that the drug has done the person any permanent good. Like all stimulants, the person taking such a drug becomes more dependent upon the artificial agent and farther removed from those natural agencies, the hygienic habits of life, which constitute the sure foundations of health.

The Public Remedy for the Secret Remedy

The secret remedy business needs exactly the same prescription that the Legislature of 1907 wrote for the fertilizer business. That prescription consisted of just two requirements: (1) that fertilizer manufacturers should write the name and amounts of the active ingredients of their fertilizer on the package or sack, and (2) that the manufacturers should pay a small tax sufficient to enable the State to verify the statement of composition and to inform farmers as to the effects of any given fertilizer upon plants.

The fertilizer people at that time doubtless argued that to make them disclose the formula of their fertilizer, the sale of which they had established through large expenditures for advertising, was unfair in that it would permit others to enter the market and put on fertilizers of practically the same composition and undersell them. They doubtless argued, again, that to put on a sack that it contained so much phosphoric acid or available potash, etc., would mean nothing to the average farmer. The General Assembly, however, in enacting the fertilizer law, answered their first objection by taking the position that they were legislating, not in behalf of the few fertilizer manufacturers, but in behalf of the hundreds of thousands of farmers in North Carolina, and, therefore, if a fertilizer of a given composition could not, after disclosure of its formula, withstand the competition of manufacturers adopting the same formula and underselling them, that they should go out of business. The General Assembly took the position that these manufacturers had no right to build up a trade on the ignorance of the public, and, depending upon secrecy of composition, sell their wares in the dark. The General Assembly was right, and everybody knew it. The General Assembly answered their second objection, namely, that a chemical formula on a sack of fertilizer would mean nothing to the average farmer, by taking the position that the Department of Agriculture, established in the interest of the agricultural industries of the State, could, with the formula of the fertilizer known, encourage farmers to ask their advice and inform and educate farmers as to the value of fertilizers of different formulæ; and this, too, was right.

Every argument that applied to the solution of the fertilizer business in 1907 will apply to the solution of the secret remedy business in 1917. If secret remedy manufacturers are charging an unfair and an enormous profit on a formula that does not include an invention or discovery (the Patent

Office would protect them if it did), they should be made to come into the competitive market and reduce the price of their wares, in behalf of the hundreds of thousands of people who buy them, to that reasonable margin of profit upon which the sale of other commodities exist and grow. Furthermore, if they are required to publish their formulæ, any citizen of North Carolina can ascertain, through the State Board of Health, the action of any drug or combination of drugs as set forth in scientific works and taught in the universities of this country. The preceding argument for the open formula for secret remedies is summed up concisely in the following statement appearing in a recent *Bulletin:*

Why cannot the Government afford sick people the same privilege of intelligent action in the treatment of their diseases and their sick children that it affords the farmer in the treatment of his cotton and his corn? *If it is wrong to require the manufacturers of secret remedies to put the formula of the remedy on the package, it is equally wrong to require the manufacturers of fertilizers to put their formula on the sack.* The State government of North Carolina should do one of two things: It should either require the formula of secret remedies on the package, or it should repeal the fertilizer act of 1907, and say to the fertilizer manufacturers of this country, "Trademark as many brands as you can; advertise your brands any way that you please; do anything—fill the sack with sawdust or ashes; do anything else that you like, and if the farmers are fools enough to buy them and use them, all right."

Another argument that the secret remedy manufacturers will bring against the open formula is that the Federal Government regulates the sale of secret remedies. The requirements of the Federal Government concerning the sale of secret remedies are two: In the first place, the Federal Government requires a secret remedy to state on the bottle the amount of the following drugs, if these drugs occur in the remedy: alcohol, morphine, opium, cocaine, heroin, alpha or beta eucain, chloroform, canabis indica, choral hydrate, acetanilid, or any derivatives or preparations of any such substances contained therein. Second, that the advertising material that appears on the package of the remedy must not be either false or fraudulent in its claims. Why should the Federal Government stop with requiring nine drugs, if contained in a remedy, to be placed upon the label? The Canadian Act requires the name of twenty-four drugs to be placed on the label if they occur in a remedy. If it is right and just to require *some* drugs known to be physiologically active to be stated upon the label, why is it not right to require *all* drugs known to be physiologically active to be stated on the label? If a drug occurring in a remedy is without effect, the manufacturer should have no objection to disclosing it, unless he wishes to commit a fraud. Why should the Government of the United States require secret remedy manufacturers to put opium, if it is contained in a medicine, on the package, and permit the sale of drugs that produce abortion, without announcing the name and amount of these drugs on the label? It is estimated that there are from 25,000 to 30,000 secret remedies on the market in the United States. According to court decisions, the Government must not stop with proving that the advertising claims on the bottle are false, but the Government must prove that the false statement is put there with the *intent* to defraud. Everybody knows what proving intent means in the court. Moreover, when the Government has to deal with from 25,000 to 30,000 secret remedies, and is only handling about 250 to 300 a year through its bureau of drugs, and when it has to handle so small a percentage of the total number through the s-l-o-w processes of the courts, one can readily understand that the birth rate of new secret remedies far exceeds the mortality rate of old frauds.

Notice that the Federal Government, in dealing with the secret remedy, deals with the *individual* remedy, one at a time, instead of the fundamental principle upon which all the harmfulness of this class of remedies rests—secrecy. *We can never control the secret remedy business by dealing with it in this way. We must deal with its fundamental principle, and that means the elimination of secrecy—the business of selling the public something in the dark.*

The present Federal requirements in regard to the sales of secret remedies are more in the interest of and are better appreciated by the secret remedy manufacturers of this country than these requirements are in the interest of and are appreciated by the public, for these requirements furnish the secret remedy manufacturers the "half-loaf" argument behind which they may plead with State general assemblies to "leave it to the Federal Government." Suppose prohibition had been left to the Federal Government!

A law requiring the elimination of secrecy in this business, publication of the formula of the remedy on the package and basing the sale of the remedy upon its merits, will gradually lead to the elimination of the false and fraudulent and harmful remedy and to the development of a class of valuable ready-made remedies. In other words, doing away with the element of secrecy will bring into operation among secret remedy interests the operation of that great law of nature, the survival of the fittest and the elimination of the unfit. Incidentally, such legislation as we are proposing will gradually lead to the education of the public in regard to the action of drugs, especially the important classes of drugs.

The legislative essentials for dealing with this business are two: (1) the elimination of secrecy, requiring that the remedy publish its formula on the package; and (2) a sufficient tax on the various brands of secret remedies on the market of this State to enable the State Government to encourage and answer inquiries from the people regarding the action of any drug or combination of drugs.

RELATION OF STATE TO COUNTY HEALTH WORK

An enlightened and ever-growing public sentiment is demanding of county governments that they recognize their responsibility and discharge their duty in the protection of human health and life from unnecessary diseases. In response to this demand, the counties are employing whole-time health officers and making other provisions for county health work.

The State, through its State Board of Health and its executive staff, must take one or two positions with reference to the development of county health work: (1) either the State, through its State Board of Health and its executive staff, must stand aside, or (2) it must assist in the proper development of county health work while this work is in its infancy, plastic, and in need of proper and friendly direction.

Can the State Board of Health assist the counties? The State of North Carolina, with 2,300,000 people, should be able to find a Board of Health or

Commission that from a standpoint of statesmanship—that is, proper motive and capacity—can assist the infant and inexperienced health departments of the counties. We think the present Board has this capacity; but, if the State thinks otherwise, then it should get a new Board.

The counties, in the beginning of county health work, need the assistance and advice of the State. The county board of health is inexperienced. It is composed of three laymen, the chairman of the board of county commissioners, the county superintendent of schools, the mayor of the county town, and two physicians selected by the three first mentioned officials. The physicians are busy men, actively engaged in the practice of medicine, directly interested in the cure of disease and only indirectly interested in disease prevention, or health work. The county health officer selected by this board is usually a physician taken out of active practice and without any experience in health work. On the other hand, the State Board of Health is composed of eight physicians—measured by professional standards, very able physicians—and a sanitary engineer. This Board employs a staff of experts who give their entire time to the study of health work, not only in this State, but the health work as carried on in other States. If these facts be true (and they are true), we respectfully submit that the counties need the help of the State Board of Health, and that the State Board of Health is capable of giving them help, or, if it is not capable, that it ought to be reorganized.

The help that the State should give the counties, in the beginning and in the development of county health work (when this work is capable of proper molding influences with great bearing on its future and when this work in itself is feeble), should go farther than a few words of encouragement and friendly advice. It should be real assistance. The State should supplement county expenditures for several reasons: (1) the county needs the supplementary appropriation; (2) a small conditional appropriation by the State, in many cases, will be a sufficient inducement to persuade a board of county commissioners to make adequate provision for county health work; and (3) a partial investment on the part of the State in the county work will give the State the necessary partnership in the county work to influence its direction and development.

There are other public health agencies, to wit, the United States Public Health Service and the International Health Board, which is a part of the Rockefeller Foundation, intensely interested and already investing money in the proper development of county health work. A conditional State appropriation, that is, conditioned on supplementary appropriations from other agencies, would probably treble or quadruple itself as a fund invested in county health work, and the combined fund that would result indirectly from a small State appropriation would go very far in giving this new work of the counties that start which will mean much in the future to the efficiency and economy of county health administrations.

The State Board of Health, therefore, recommends to the General Assembly that it appropriate a sum of $15,000 to be used in county health work, under the direction of the Board, in a proportion of not more than $1 for $2 appropriated and invested by other agencies in county health work, the plan of county health work having first been approved by the North Carolina State Board of Health.

MINUTES OF MEETINGS OF THE STATE BOARD OF HEALTH

MEETING OF EXECUTIVE COMMITTEE OF THE STATE BOARD OF HEALTH
GREENSBORO, N. C., JUNE 14, 1915

The chairman of the committee, Dr. J. Howell Way, called the meeting to order, both of the other members, Dr. R. H. Lewis and Col. J. L. Ludlow, being present.

The object of the meeting was stated to be the consideration of bids for the new building and equipment as provided for in the acts of the General Assembly of 1915.

Mr. C. C. Hook of Hook & Rogers, architects, fully explained the plans of the buildings to the committee. The bids were then opened and fully considered. It was found that Mr. C. V. York was the lowest bidder for the construction of the main building, and the contract was awarded to Mr. C. V. York on condition that he would furnish the necessary surety bond on a bid of $14,890.

Bids for plumbing were then opened. It was found that the Raleigh Iron Works had sent in the lowest bid, at $2,475, and the contract was therefore awarded to the Raleigh Iron Works.

It was then moved that the remaining items of permanent improvements for which bids had been submitted be referred to Superintendent McBrayer and Mr. Hook for further consideration. This motion was unanimously carried.

A motion to adjourn was then carried. W. S. Rankin, *Secretary.*

ANNUAL MEETING OF THE NORTH CAROLINA STATE BOARD OF HEALTH
GREENSBORO, N. C., JUNE 15, 1915

President Way took the chair and called the meeting to order. The other members of the Board present were Doctors Lewis, Anderson, Laughinghouse, Spencer, Thompson, Wood, and Col. J. L. Ludlow.

The President asked the Secretary to state the objects of the meeting. The Secretary stated that there were three matters to come before the Board, to wit: the election of a member of the Board to succeed Dr. A. A. Kent, who had been elected as a representative from Caldwell County to the General Assembly of 1915; the election of a Secretary of the State Board of Health; and, lastly, consideration of the present status of the work of the State Board of Health.

It was suggested that the objects of the meeting be considered in the order stated by the Secretary.

Dr. Richard H. Lewis then nominated Dr. Fletcher R. Harris to succeed Dr. A. A. Kent as a member of the State Board of Health. The nomination was seconded and Dr. Harris was duly elected a member of the State Board of Health to fill the unexpired term of Dr. A. A. Kent.

Dr. Rankin asked to be allowed to retire during the election of a Secretary. Dr. Edward J. Wood was asked to serve as Secretary *pro tem.* Dr. Rankin was later notified by Dr. Cyrus Thompson of his unanimous election as Secretary of the State Board of Health.

The minutes of the Board as recorded by Dr. Wood, Secretary *pro tem.*, were as follows: Dr. Lewis nominated Dr. Rankin, claiming, for sentimental reasons, this honor.

The Secretary *pro tem.* cast the unanimous vote of the Board for Dr. Rankin as Secretary for the term of six years.

The Board, at the suggestion of President Way, directed the Secretary to prepare suitable official resolutions expressing the regret of the Board at the retirement of Dr. A. A. Kent as a member and expressing the appreciation of the Board of Dr. Kent's interest and activity in the General Assembly of 1915 in public health legislation. The Secretary was directed to present the resolutions drafted to the President for his approval and for his presentation to the Conjoint Session. The following resolution was adopted:

A RESOLUTION OF THE NORTH CAROLINA STATE BOARD OF HEALTH ON THE RETIREMENT OF DR. A. A. KENT AS A MEMBER OF THE BOARD

Whereas it became necessary under the laws of North Carolina, prohibiting the holding of dual State offices, for Dr. A. A. Kent, on his election to the General Assembly of North Carolina, to retire as a member of the North Carolina State Board of Health; and whereas the loss of Dr. Kent's counsel to the Board has become the gain of Dr. Kent's counsel to the State: Therefore, be it

Resolved, That the North Carolina State Board of Health do hereby officially record their appreciation of Dr. Kent's past services as a member of this Board and their appreciation of his able, untiring, and successful work in the General Assembly of 1915 in the interests of public health in particular and the State in general.

The State Board of Health then adopted the following resolutions with reference to the Rockefeller Sanitary Commission:

THE OFFICIAL THANKS OF THE NORTH CAROLINA STATE BOARD OF HEALTH FOR THE ASSISTANCE OF THE ROCKEFELLER SANITARY COMMISSION

Whereas the five-year period for which the Foundation for the Eradication of Hookworm Disease was established has expired; and whereas the work of the Rockefeller Sanitary Commission terminated in North Carolina May 1, 1915; and whereas the Rockefeller Sanitary Commission has expended the sum of $81,516.23 during the last five years in improving sanitary conditions in North Carolina; and whereas the work of the Commission has resulted directly in the examination of 267,999 citizens of this State for hookworm infection, in furnishing treatment to 95,618 infected citizens, in improving 1,796 privies, and, indirectly, in an extensive development of an intelligent appreciation for public health work along all lines of sanitation: Therefore, be it

Resolved, That the North Carolina State Board of Health do hereby officially record their appreciation of the work in this State during the last five years of the Rockefeller Sanitary Commission; and

Be it further Resolved, That a copy of these resolutions be sent to the successors of the Rockefeller Sanitary Commission, to wit, the International Health Commission, and that these resolutions be given public notice through the Bulletin of the North Carolina State Board of Health.

The Secretary then discussed with the Board the present condition of the State's health work. The Secretary called attention of the Board to the condition of its finances, which he said were satisfactory. He pointed out a 25 per cent increase in the work of the Laboratory this year over last year. He showed through certain tables the improvement in vital statistical work and told the Board that he felt reasonably sure that on the completion of the investigation of the records of the office and the registration work in the field now being made by a United States Government expert, as requested by Dr. Rankin and Dr. Gordon, the State would be admitted as a registration State.

The Board directed the Secretary to suggest to Dr. McBrayer the advisability of having a supervisor of construction to see that the architect's plans were carefully complied with by the contractor. It was the sense of the Board that the supervisor should act with Messrs. Hook & Rogers and give the Sanatorium additional security against error in the construction of the Sanatorium.

The Board also directed the Secretary to request Dr. Shore to again call the attention of the druggists, through a letter, and of the public, through a statement by the Bureau of Education and Engineering, to the importance of proper temperature conditions for the keeping of vaccines and antitoxins.

The Board then adjourned. W. S. Rankin, *Secretary.*

ANNUAL MEETING OF THE NORTH CAROLINA STATE BOARD OF HEALTH GREENSBORO, N. C., JUNE 16, 1915

(continued)

President Way took the chair and called the meeting to order. The members of the Board present were Doctors Anderson, Harris, Laughinghouse, Lewis, Spencer and Thompson.

The object of the meeting was stated by the Secretary to be to hear from Dr. C. A. Shore, Director of the State Laboratory of Hygiene, in regard to the interests of the Laboratory. Dr. Shore took up with the Board the location of the Laboratory. From a blue-print he pointed out to the Board the thirty-two acres of land which were transferred to the State Board of Health and also ten acres of land now owned by the city of Raleigh which the city had offered to trade the Board for their tract of thirty-two acres. Dr. Shore stated that about fourteen acres of the thirty-two acres owned by the Board was swamp land. There was much discussion as to the desirability of a site for the Laboratory. Dr. Lewis moved that the Board decline to accept the proposition of the city of Raleigh and that the Board offer to trade the thirty-two acres for sixteen acres of the land owned by the city of Raleigh, as pointed out by Dr. Shore on blue-print. This motion was unanimously carried.

Dr. Laughinghouse moved that Dr. Shore be directed to secure the necessary legal advice upon which to act in carrying out the above motion. This motion was unanimously carried.

It was then moved that both of the above motions be submitted to the Council of State for their approval.

It was moved that Dr. Shore be directed, in case the city of Raleigh should decline the counter proposition of the Board, to investigate other possible sites and conditions upon which they might be obtained with a view to bringing further proposals relative to ground for the biological plant before the

Board or the Executive Committee of the Board. This motion was likewise unanimously carried.

The question of assistance for the biological plant was then considered. The following letter was read by the President of the Board of Health:

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF ANIMAL INDUSTRY,
WASHINGTON, D. C., May 19, 1915.

NORTH CAROLINA STATE BOARD OF HEALTH,
Raleigh, N. C.

GENTLEMEN:—I am advised that Dr. Howard J. Shore is being considered by your Board for a position in the State Laboratory of Hygiene of North Carolina. I have known Dr. Shore personally and have been acquainted with his work for ten years or more, and I desire to make for your information the following statement:

Dr. H. J. Shore entered the service of the United States Department of Agriculture, Biochemic Division, in May, 1902. He has served in the laboratories of this Division continuously since that time. His work has consisted of bacteriological researches and routine bacteriological work of the most varied character, and recently his duties have consisted in supervising the control which this Division exercises over commercial establishments manufacturing biological products.

I regard him as thoroughly equipped to do any kind of bacteriological work. He is earnest, industrious, and competent, and I have no hesitation in recommending Dr. Shore to you as fitted to take up any kind of bacteriological work.

In addition to being well equipped in a professional way for any bacteriological work in a Board of Health Laboratory, Dr. Shore is a man of pleasing personality and of high moral character. It would be with the deepest regret that I would see Dr. Shore leave this Division; but I feel that in justice to him, I should tell you of his qualifications and that I should not stand in the way of his advancement. The Bureau of Animal Industry now pays Dr. Shore $2,040 per annum, and I have no doubt that if he remains in the service of the United States Government his salary will be materially increased.

Very truly yours, (Signed) M. DORSET,
Chief Biochemic Division.

Dr. C. A. Shore stated that he thought Dr. H. J. Shore could be obtained for a salary of $2,500; Dr. Shore stated further that Dr. H. J. Shore could do both the work of a veterinarian and a physiological chemist, and in this dual rôle would serve the ends of economy.

It was then moved that Dr. H. J. Shore be employed as Assistant Director of the State Laboratory of Hygiene at a salary of $2,500 a year, Dr. H. J. Shore's term of service to begin whenever he is needed. This motion was seconded and carried.

The question of increasing the salary of the Director of the State Laboratory of Hygiene was then brought up. After considering the salaries paid the directors of State laboratories of hygiene in other States and the attitude of the General Assembly toward increasing the salaries of State officers, the following motion was made and carried:

Moved, that while the Board very deeply appreciates the excellent work of Dr. Shore, after a careful consideration of the circumstances, the Board regrets its inability to grant the increase of salary requested.

A motion to adjourn was then made and carried.

W. S. RANKIN, *Secretary.*

ANNUAL MEETING OF THE NORTH CAROLINA STATE BOARD OF HEALTH

PINEHURST, N. C., APRIL 20, 1916

President J. Howell Way in the chair called the meeting to order. The other members present were Doctors Anderson, Laughinghouse, Lewis, Spencer, and Thompson.

The minutes of last meeting were read and approved.

A letter from Dr. E. J. Wood to the Secretary, stating that he could not be present on account of the illness of a little daughter, was read to the Board. Dr. Wood in his letter interestingly discussed the reconcilement of those that hold the eating of corn to be the cause of pellagra and those who recognize the disease as a dietetic disease due to a deficiency of proteid elements in the food.

The attention of the Board was then called to the location and the plans for construction of the State Laboratory. Both the location and the plans were approved. The Secretary was directed to see that a clear title for the land on which the Laboratory is to be built was obtained. The Board directed that the Laboratory open bids for the construction of the new building.

The next matter brought to the attention of the Board was several communications from optometrists and a formal communication from the Executive Committee of the North Carolina Optometric Society, protesting against the publication and further distribution of Bulletin No. 66, entitled "Weak Eyes." It was directed that the Secretary reply to these communications and state to the writers that an opinion of the Attorney-General on the further distribution of the pamphlet would be requested, and, in the meantime, the further distribution of that pamphlet would be discontinued, pending the reply of the Attorney-General. The Secretary was directed to obtain an opinion from the Attorney-General on any legal questions involved in the further publication and distribution of the aforesaid pamphlet.

W. S. RANKIN, *Secretary.*

ANNUAL MEETING OF THE NORTH CAROLINA STATE BOARD OF HEALTH

SANATORIUM, N. C., APRIL 21, 1916

(*continued*)

President J. Howell Way called the meeting to order. The other members of the Board present were Doctors Anderson, Laughinghouse, Lewis, Spencer, and Thompson. Superintendent L. B. McBrayer of the Sanatorium also attended the meeting.

The first matter presented to the Board was a bill for $43 from W. C. Dimmick, an undertaker residing at Southern Pines. The bill dated back four years, was made by a former administration before the Sanatorium was turned over to the management of the State Board of Health, and was not presented to the State Sanatorium until the Sanatorium had given notice to the old creditors of the institution and had supposed to have closed up all accounts. It was moved and carried that the Board of Health decline to pay the bill, pleading the statute of limitations.

The next matter brought before the Board was that of two notes for $200 each, purporting to be due the Fayetteville Steam Laundry. This matter was left in *statu quo*, it being the opinion that the Sanatorium had paid these notes when Mr. Glenn was business manager.

The third matter brought to the attention of the Board was a letter from the State Forester agreeing to reforest and protect (from forest fires, etc.) 300 acres of the Sanatorium land lying east of the Sanatorium and on both sides of the railroad and dirt road, and to advise as to the best method of protecting the remainder of the land and timber from forest fires. The letter stated that the trees ought to be 6 inches in diameter in fifteen years, and that the timber should be merchantable in twenty-five years. It was moved and unanimously carrried that the proposition from the State Forester be accepted.

A proposition from Messrs. Graham and William Blue offering $1,000 for all pine saw-timber now on the Sanatorium land next received the attention of the Board. A letter from the State Forester advising against the sale of this timber and stating very strongly reasons why the sale should not be made was also read. It was moved and carried that the proposition of Messrs. Graham and William Blue be declined.

The attention of the Board was then called to a claim of Mr. J. A. Hearne, the former farm supervisor, against the Sanatorium. Superintendent McBrayer stated that when he took charge of the Sanatorium Mr. Hearne and his two sons were being paid $100 per month for running the farm, and that he made a verbal agreement with Mr. Hearne for a continuance of his services, together with the services of his sons. This claim and an argument for its payment by an attorney are in the files of the Sanatorium, and, therefore, are not included in and made a part of the minutes of the meeting. It was moved and carried that this matter be left for adjustment with Superintendent McBrayer.

Superintendent McBrayer then made a statement of the present contracts of the Sanatorium for construction and equipment and the amounts that had been paid on these contracts, the amounts still to be paid, and the funds available for outstanding accounts. These statements are not included as a part of the minutes of the meeting, as they are readily available in the official files of the Sanatorium.

Mr. Rogers, of Hook & Rogers, the architects for the new building, then made a statement to the Board as to the work of the contractor, Mr. C. V. York. Mr. Rogers stated that taken as a whole the work had been well done, and, as compared with contracts for other State buildings, was entirely acceptable; that there were certain minor defects, but that these minor defects were more than offset by extra work. Mr. Rogers mentioned as defects a slight warping of several doors, a few leaks in plumbing, and some unfinished dressing of the brickwork on the front of the building, and mentioned as extra work an increase in the depth of the foundation requiring between 900 and 1,000 bricks. He recommended that the additional work offset the defects, stating, however, that the leaks in the plumbing would be remedied by the contractor who put in the plumbing. Mr. Rogers further stated that the contract called for completion and delivery of the building by the contractor on December 1, 1915, and that the building was not turned over for acceptance until January 15, 1916. He stated, however, that the contractor, Mr. York, had been very much delayed by the failure of the plumbers to put in the plumbing in such time as to permit the plasterers to go ahead with their work. Mr. York said that he was delayed about four weeks, but that he delivered the building before it could be used on account of the delay in the American Heating Company in furnishing their part of the equipment. It was therefore moved and carried that no forfeiture shall be exacted of the contractor, Mr. C. V. York. The accounts of the contractor and the Sanatorium were found to be in accord. The building was accepted, and Superintendent McBrayer was directed to pay the balance due Mr. York.

The contract of the American Heating Company was then considered. Mr. Rogers, the architect, stated that the equipment for heating the building was a good job, that the machinery was working excellently, and that he recommended the acceptance of the heating plant. Superintendent McBrayer stated that the building was well heated. The question of forfeiture for delay in completing the equipment for heating the building was then taken up. The heating equipment, which should have been completed by December 16, 1915, was not completed until April 4, 1916. Both Mr. Rogers and Dr. McBrayer testified that evidence showed that the American Heating Company at Charlotte had done everything possible to obtain the machinery, but that the manufacturers, presumably on account of the large demand for iron products in connection with the war, had greatly delayed the American Heating Company in the completion of their contract. The Board was disposed to punish the American Heating Company for the delay in the completion of the contract. It was moved and carried that final settlement with the American Heating Company be referred, with power to act, to Superintendent L. B. McBrayer and Secretary W. S. Rankin.

The contract for plumbing was next considered. It was moved and carried that settlement with the plumbers be made when existing leaks in the plumbing should be closed and when the plumbers had located the end of the gas line. Superintendent McBrayer stated that he had been notified by the Mott Iron Works Company of Raleigh to withhold $729.85 of the amount due on the contract with the plumbers, who have, since being awarded the contract, gone into bankruptcy. A letter from the Attorney-General with reference to handling this matter was read. This letter is now a part of the official file of the Sanatorium. It was moved and carried that settlement with the Raleigh Iron Works and the Mott Iron Works be referred, with power to act, to the Superintendent of the Sanatorium and the Secretary of the State Board of Health.

Superintendent McBrayer then called attention to a balance of $149.60 claimed by the Toomey Plumbing and Heating Company for laying water lines to the Office Building and to the Superintendent's residence. This plant does not furnish hot water to the Superintendent's residence, but does furnish hot water to the Office Building. Mr. Rogers stated that the company was willing to put in a vacuum pump that would deliver the hot water to the Superintendent's residence. This matter was referred, with power to act, to the Superintedent of the Sanatorium and the Secretary of the State Board of Health.

Superintendent McBrayer reported that he had sufficient money in hand to pay all accounts for construction and equipment. The financial statements in detail are in the official files of the Sanatorium.

A motion to adjourn was carried. W. S. RANKIN, *Secretary.*

GENERAL FINANCIAL REPORT, STATE BOARD OF HEALTH, FOR TWO YEARS ENDING NOVEMBER 30, 1916.

RECEIPTS.

Appropriations—	*Annually*		
State Board of Health	$ 30,000.00		
Bureau of Vital Statistics	10,000.00		
		$ 80,000.00	
From Other Sources—			
Executive Department, 1915	$ 48.35		
Executive Department, 1916	5.50		
		53.85	
Bureau of Vital Statistics, 1915	$ 177.23		
Bureau of Vital Statistics, 1916	25.12		
		202.35	
Bureau of Engineering and Education, 1915	$ 407.45		
Bureau of Engineering and Education, 1916	2,314.38		
		2,721.83	
Bureau of Hookworm Eradication, 1915		50.00	
Bureau of Rural Sanitation, 1915	$ 112.50		
Bureau of Rural Sanitation, 1916	5,194.00		
		5,306.50	
Grand total			$ 88,334.53

DISBURSEMENTS.

Overdraft, December 1, 1914		$ 1,271.99	
Executive Department, 1915	$ 7,675.28		
Executive Department, 1916	7,593.62		
		15,268.90	
Bureau of Vital Statistics, 1915	$ 15,305.81		
Bureau of Vital Statistics, 1916	12,213.91		
		27,519.72	
Bureau of Engineering and Education, 1915	$ 10,190.81		
Bureau of Engineering and Education, 1916	12,317.73		
		22,508.54	
Bureau of Hookworm Eradication, 1915		1,750.08	
Bureau of Rural Sanitation, 1915	$ 3,347.11		
Bureau of Rural Sanitation, 1916	11,903.75		
		15,250.86	
Bureau of Accounting, 1915	$ 1,472.24		
Bureau of Accounting, 1916	1,747.24		
		3,219.48	
Grand total			86,789.57
Balance November 30, 1916			$ 1,544.96

FINANCIAL REPORT, STATE LABORATORY OF HYGIENE, FOR TWO YEARS ENDING NOVEMBER 30, 1916.

RECEIPTS.

Appropriation, 1915		$ 10,500.00
Appropriation, 1916		15,500.00
Water taxes, 1915	$ 5,357.20	
Spring taxes, 1915	1,201.00	
Fees	1,199.95	
	$ 7,758.15	
Less commissions	217.62	
		7,540.53
Water taxes, 1916	$ 7,137.80	
Spring taxes, 1916	933.00	
Fees	1,211.15	
	$ 9,281.95	
Less commissions	290.00	
		8,991.95
Pasteur treatment, 1915		145.00
Pasteur treatment, 1916		350.00
Rent, 1916		38.00
Miscellaneous, 1916		17.96
Total		$ 43,083.44

DISBURSEMENTS.

Overdraft December 1, 1914	$ 590.96	
Disbursements, 1915	17,820.72	
Disbursements, 1916	16,939.55	
		35,351.23
Balance November 30, 1916		$ 7,732.21

CONSTRUCTION ACCOUNT.

Appropriation, 1915		$ 15,000.00
Disbursements, 1915	$ 637.03	
Disbursements, 1916	12,115.70	
		12,752.73
Balance November 30, 1916		$ 2,247.27

REPORT OF AUDIT, STATE BOARD OF HEALTH, FEBRUARY 3, 1916

HON. ALEX. WEBB, *Chairman,*
Board of Internal Improvements,
Raleigh, N. C.

DEAR SIR:—As requested, I have audited the books of the State Board of Health for the two years ended November 30, 1916, and herewith submit detailed statements of the appropriations, earnings and expenditure of the various departments, together with a balance sheet of the fund accounts showing the condition of the funds at the close of each of the two fiscal years.

The accounts of the Sanatorium for Tuberculosis are not included in this report for the reason that the detailed records are not incorporated in the books of the State Board of Health, but are kept at the Sanatorium. This is made the subject of a separate report.

The accounting of the State Board of Health is complete and accurate, the transactions being shown in detail and supported by proper vouchers. Furthermore, the books are arranged to show at a glance the condition of the funds of each department.

All books and papers were promptly placed at my disposal and every opportunity was afforded for making my examination as complete as might be desired.

Respectfully submitted,
CHAS. N. GOODNO,
Certified Public Accountant.

FUND BALANCE SHEET

At Close of Fiscal Year.

	November 30, 1915		November 30, 1916	
Cash in bank and office	$13,975.90		$12,027.97	
Accounts receivable	3,566.05		2,795.00	
Executive department	324.23			$ 340.41
Bureau of Vital Statistics		$ 138.04		1,186.08
Bureau of Engineering and Education		25.27		21.92
State Laboratory of Hygiene		3,339.90		10,527.21
State Laboratory of Hygiene, construction		14,362.97		2,247.27
Bureau of Rural Sanitation				290.25
International Health Board				209.83
State Treasurer	5,000.00		5,000.00	
Contingent fund		5,000.00		5,000.00
Totals	$22,866.18	$22,866.18	$19,822.97	$ 19,822.97

APPROPRIATION FOR CONSTRUCTION OF STATE LABORATORY OF HYGIENE.

Appropriated by State of North Carolina		$ 15,000.00
Expenditures, 1914-1915—		
Repairs and additions to building	$ 196.97	
Equipment	440.06	
		637.03
Balance, November 30, 1915		$ 14,362.97
Expenditures, 1915-1916—		
Land and cottage	$ 2,312.50	
Building contractor*	8,029.00	
Architect	446.86	
Plumbing contractor	697.00	
Sewer contractor	523.70	
Re-survey of land	10.00	
Advertising for bids	5.04	
Repairs to well	25.00	
Plastering cottage	66.60	
		12,115.70
Balance, November 30, 1916		$ 2,247.27

*Contract price of building, $9,339.00.

APPROPRIATIONS, EARN

For the Fiscal Year

Totals— All Departments			Executive Department	Bureau of Vital Statistics
$ 3,676.39	$	Balance from preceding year	$*3,523.91	$ 738.04
		Appropriations—		
	50,500.00	State of North Carolina	30,000.00	10,000.00
	19,290.19	Executive Department, State Board of Health		4,583.34
	3,630.80	Philanthropic organizations		37.14
73,537.79	116.80	Unexpended appropriations of sub-departments	116.80	
$77,214.18		Totals (appropriations and balances)	$26,592.89	$ 15,358.52
		Less amounts accounted for by sub-departments:		
	$ 4,583.34	Bureau of Vital Statistics	$ 4,583.34	
	10,000.00	Bureau of Engineering and Education	10,000.00	
	1,472.24	Bureau of Accounting	1,472.24	
	3,234.61	Bureau of Rural Sanitation	3,234.61	
	116.80	Executive Department		
19,406.99		Total accounted for by sub-departments	$19,290.19	
$57,807.19		Balance, net appropriations	$ 7,302.70	$ 15,358.52
		Earnings—		
	$ 1,042.21	Fees		18.50
	138.78	Pasteur treatment		
	5,759.00	Water taxes		
	977.00	Mineral spring taxes		
	278.64	Transcripts to Federal Census Bureau		278.64
8,195.63		Total available for expenditure	$ 7,302.70	$ 15,655.66
$66,002.82		*Expenditures—*		
	$37,440.06	Salaries	$ 4,803.52	$ 7,461.06
	4,906.53	Postage	186.16	2,205.00
	352.37	Telephone and telegraph	97.74	26.40
	850.45	Freight, drayage and express	21.21	28.15
	195.67	Books and magazines	58.97	14.00
	3,923.00	Traveling expense	1,452.92	176.93
	1,286.93	Furniture and fixtures	153.04	456.54
	34.00	Membership dues	29.00	
	2,309.51	Supplies	160.40	289.78
	386.01	Fuel, lights, and water	15.00	
	818.84	Printing and multigraphing	509.56	30.25
	97.85	Insurance	31.85	
	25.00	Quarantine expense	25.00	
	339.40	Transcripts, Census Department		339.40
	1,511.73	Indexing		1,511.73
	738.39	Tabulating		738.39
	183.70	Advertising		100.00
	158.90	Fees paid local registrars		158.90
	1,844.01	Field work		1,844.01
	111.08	Checking		111.08
	1,081.40	Exhibit material		
	731.22	Lecture outfits		
	192.33	Photographs, cuts and drawings		
	261.50	Addressograph		
	382.60	Rent and repairs		
	63.00	Laundry		
	9.75	Smallpox vaccine		
	1,774.70	Typhoid vaccine		
	37.05	Dispensary supplies		
	119.85	Henderson County expense		
	304.73	Commission		
	7.65	Repairs	2.40	
	344.63	Miscellaneous	80.16	26.00
62,823.84		Total expenditure	$ 7,626.93	$ 15,517.62
$ 3,178.98		Balances	$ *324.23	$ 138.04

*Overdraft.

INGS AND EXPENDITURES.
Ended November 30, 1915.

Bureau of Engineering and Education	State Laboratory of Hygiene	Bureau of Hookworm Eradication	Rockefeller Sanitary Commission	Bureau of Accounting	Bureau of Rural Sanitation
$ 191.37	$ 2,837.24	$ 1,816.88	$ 1,999.51	$	$
	10,500.00				
10,000.00				1,472.24	3,234.61
			3,593.66		
$ 9,808.63	$ 13,327.34	$ 1,816.88	$ 5,593.17	$ 1,472.24	$ 3,234.61
		116.80			
$	$	$	$	$	$
$ 9,808.63	$ 13,327.34	$ 1,700.08	$ 5,593.17	$ 1,472.24	$ 3,234.61
29.71	994.00				
	138.78				
	5,759.00				
	977.00				
$ 9,838.34	$ 21,206.02	$ 1,700.08	$ 5,593.17	$ 1,472.24	$ 3,234.61
$ 5,233.43	$ 11,377.72	$ 1,515.60	$ 4,063.54	$ 1,211.28	$ 1,773.91
1,389.04	910.12		100.09	74.24	41.88
50.62	103.91	3.00	15.97	17.78	36.95
89.04	679.96	.39	7.21	.53	23.96
43.25	69.60		4.50	5.35	
159.47	401.50	170.49	1,062.13	47.40	452.16
454.97	129.08	5.00		86.00	2.30
5.00					
131.48	1,427.72	4.60	251.18	26.68	17.67
	371.01				
27.26			66.49	.98	184.30
	66.00				
					83.70
1,081.40					
731.22					
84.45					107.88
261.50					
	382.60				
	63.00				
	9.75				
	1,424.70				350.00
					37.05
					119.85
	304.73				
5.25					
65.69	144.72	1.00	22.06	2.00	3.00
$ 9,813.07	$ 17,866.12	$ 1,700.08	$ 5,593.17	$ 1,472.24	$ 3,234.61
$ 25.27	$ 3,339.90	$	$	$	$